

ONE YEAR OF
Non-Partisan Municipal Administration
BOROUGH OF BROOKLYN
NEW YORK CITY
1902

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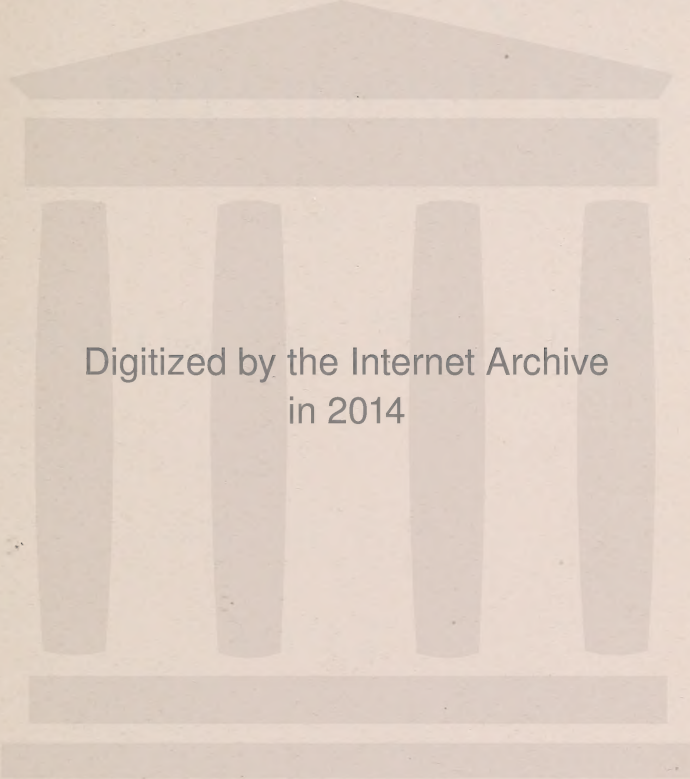
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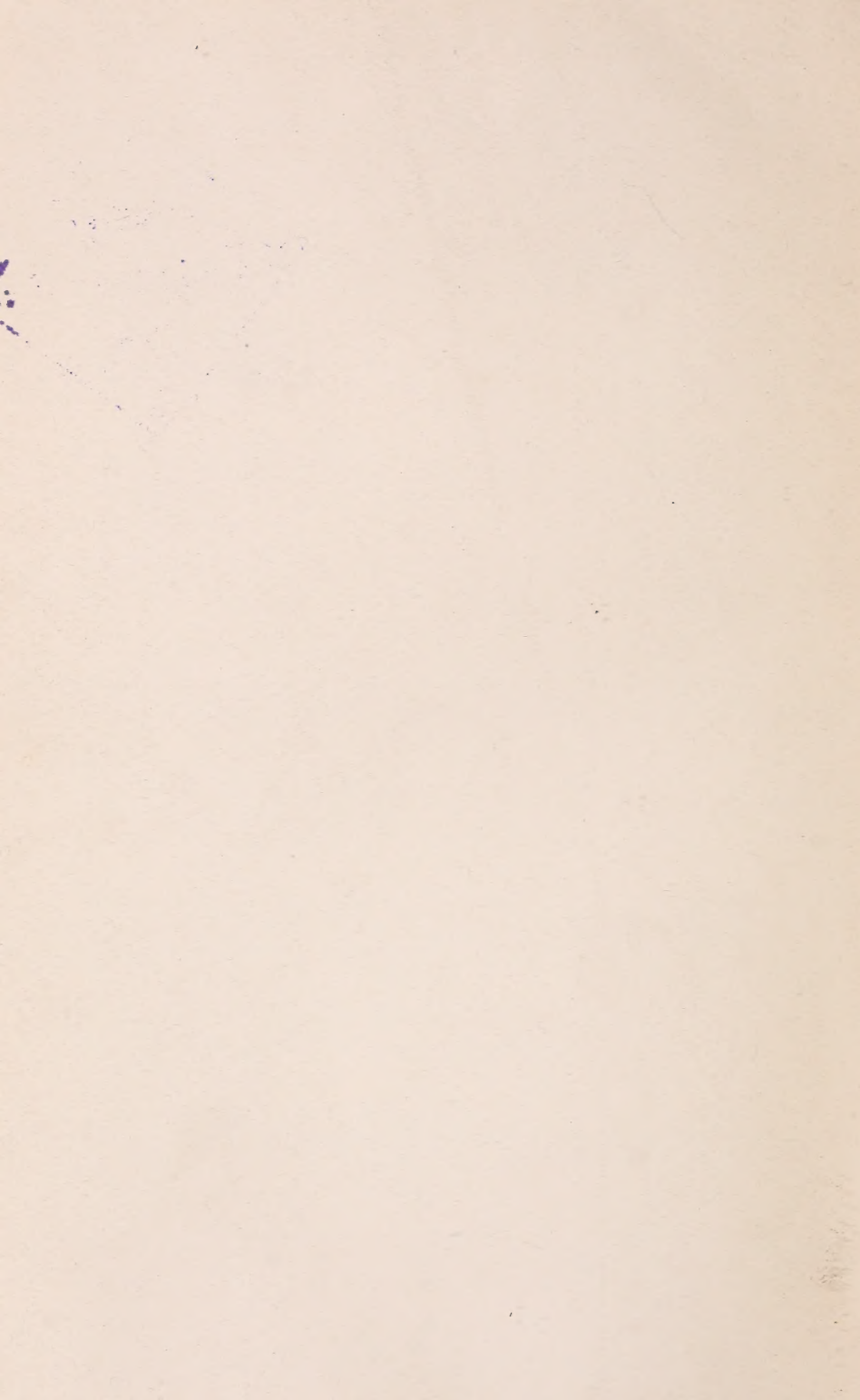




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ANNUAL REPORT

OF THE

PRESIDENT

OF THE

BOROUGH OF BROOKLYN

FOR THE YEAR

1902



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ANNUAL REPORT
OF THE
PRESIDENT OF THE BOROUGH OF BROOK-
LYN FOR THE YEAR 1902.

JANUARY 1, 1903.

HON. SETH LOW,
MAYOR,
New York City.

DEAR SIR—In pursuance of the provisions of section 383 of the amended Greater New York Charter, I have the honor to submit to you my report as President of the Borough of Brooklyn for the year 1902.

At the municipal election of 1901 the citizens of Brooklyn demanded the establishment of a borough administration which would be entirely divorced from politics. This mandate implied an abandonment of the false and evil tradition that the right of administering a city's affairs should be the reward of victory at the polls and that the "spoils of office" should be distributed as patronage by a centralized political machine. This corrupt theory of government has been abandoned by the best element of every urban community. It is a survival of the unfittest. Intelligent men everywhere recognize the fact that the business of a city, as opposed to the larger policies of the state and nation, should be transacted on purely business principles. It is indisputable that the administration of cities on a partisan basis has always produced wilful and corrupt extravagance. Government by party is a necessary product of social evolution. But it has its proper sphere. It should be associated only with the exercise of sovereign power and

should, therefore, in my opinion, be excluded from the administration of municipal affairs.

Under the laws of this State a city is simply a municipal corporation, differing not in kind but in degree from other corporate bodies. The Charter of The City of New York is nothing more than a codification of business rules and provides that the administration of municipal affairs shall be conducted on strict business lines. It ignores and therefore excludes all political considerations.

A non-partisan government has been in charge of Brooklyn's interests since January 1, 1902. It is now possible, therefore, to judge, from a survey of what has been accomplished by this Department in twelve months, whether, as far as Brooklyn is concerned, this experiment has been justified by the results. In order to reach a sound conclusion on this subject, it will be necessary to make an accurate comparison of the work done by this Department from January 1, 1902, up to the present time with that which was performed by the last administration during its four years of office. In doing so, however, it will be necessary to bear in mind the fact that the amended Greater New York Charter revolutionized to a large extent the system of municipal government which existed from January 1, 1898, to January 1, 1902.

Chapter 378 of the Laws of 1897 united in one city the counties of New York, Kings, Richmond and a part of Queens. But, although it divided the municipality into five theoretically independent boroughs and created the office of Borough President, the practical results were disappointing. The local boards of public improvements, from which so much was expected, had only the power of recommendation. All authority was vested in the Municipal Assembly, the Board of Public Improvements and the Board of Estimate and Apportionment. All the administrative departments, such as Water Supply, Streets and Highways, Sewers, Public Buildings, Lighting and Supplies, were concentrated in Manhattan. It was not surprising, therefore, that, under such circumstances, the Borough

of Manhattan was looked upon as The City of New York, to the disadvantage of the other boroughs. So far as Brooklyn was concerned, no rational policy was inaugurated for the purpose of improving the condition of its thoroughfares; nor did The City of New York attempt to establish, except within the sphere of intention and half-hearted effort, a proper and adequate sewerage system in the outlying districts of the borough.

The assertion has been made that large sums of money were spent for public improvements in Brooklyn during the four years succeeding consolidation. This may be true. But, if the results obtained during that period are compared with what has been accomplished in the first year of the present administration, the contrast will emphatically demonstrate the fact that taxpayers receive very much greater value for their money under a business administration of municipal affairs than under a partisan administration. The public improvements effected in this borough during the last twelve months involved a larger expenditure of money and conferred, in my opinion, a more lasting benefit upon the community than those completed during the four preceding years.

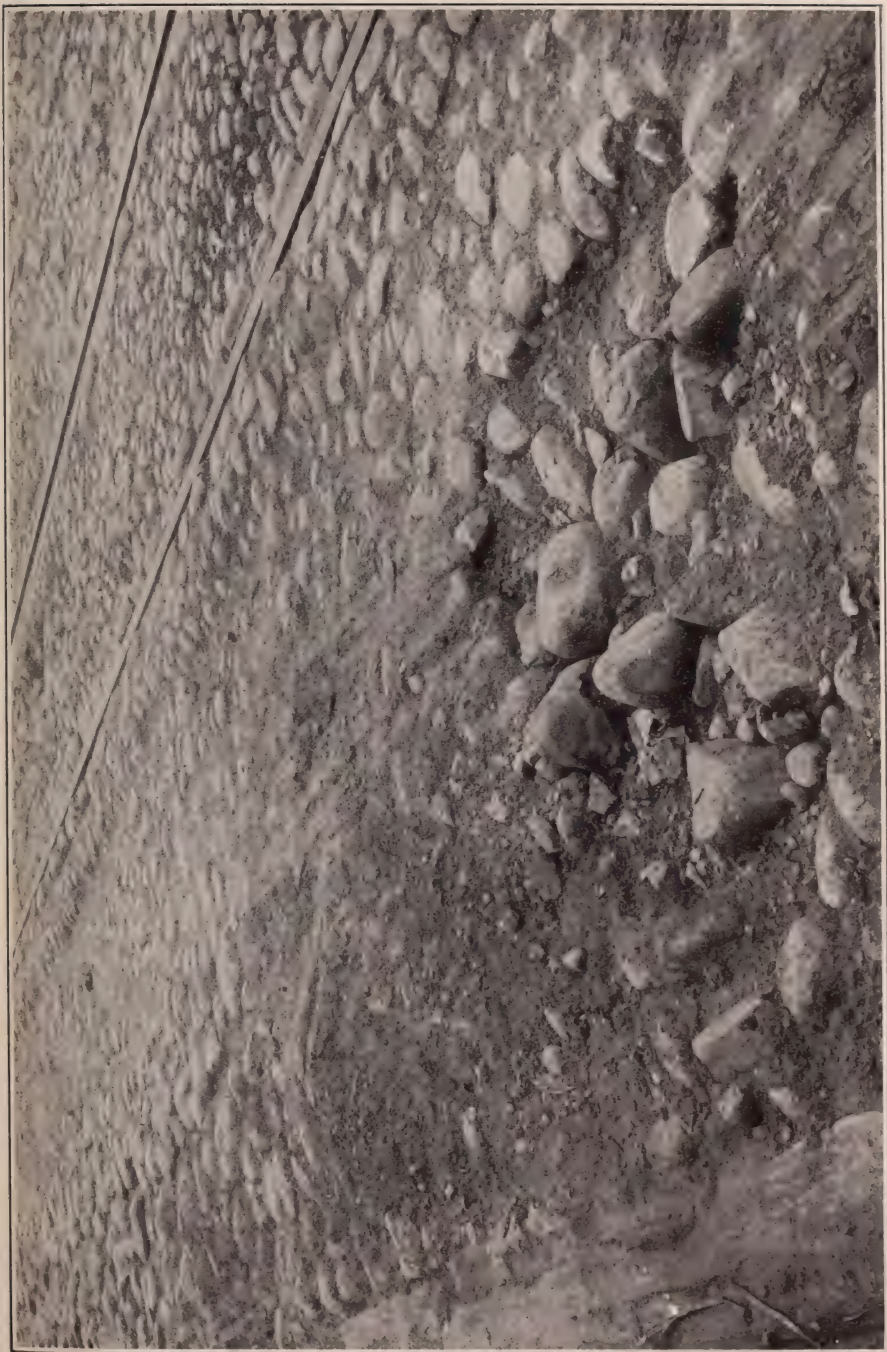
The enactment of the amended Greater New York Charter has, to a large extent, removed the disabilities under which Brooklyn suffered. It has clothed the President of a borough with actual administrative powers and has placed under his direct jurisdiction the machinery required to effect all public improvements. It has vitalized the functions of the local boards by making them subsidiary only to the Board of Estimate and Apportionment. In short, it has restored to Brooklyn, as far as its administrative agencies are concerned, a large and satisfactory measure of local self-government.

The quality and quantity of work performed by this Department during the year 1902 have, in my opinion; amply justified the action of the Legislature in amending the Charter and decentralizing the City government.

NOTABLE RECORD MADE BY THE BUREAU OF HIGHWAYS.

The City of New York is not responsible for the unsatisfactory condition of a large proportion of this borough's thoroughfares. As a city, Brooklyn adopted a paving policy which has of late years been almost universally condemned.

The Common Council of the former City of Brooklyn, from considerations of unwise economy, authorized the laying of cobblestone pavements; and it has been found by experience that in time they become unsightly and dangerous and that, on account of the necessity of keeping them constantly in repair, they are the most expensive of all pavements. It was the manifest duty, therefore, of The City of New York, while not ignoring the needs of other boroughs, to solve this most insistent of Brooklyn's problems. The population of this borough and its real estate values had not increased, during the ten years preceding consolidation, as rapidly as its natural advantages seemed to warrant. One of the chief causes that impeded its progress was the unattractiveness of its thoroughfares, especially in the suburban districts. Consolidation lent to this borough the credit of The City of New York; but, from January 1, 1898, to December 31, 1901, the Municipal Assembly failed, relatively speaking, to recognize the fact that what Brooklyn needed more than anything else was clean, well-paved and attractive streets. It is a humiliating fact that, with perhaps one exception, this borough has a larger mileage of cobblestone pavement than any other urban community in the world. It has been the policy of this Department, therefore, to replace cobblestone pavement as quickly as possible with either asphalt or granite block pavement on a concrete foundation. For somewhat similar reasons macadamizing as a method of paving has been largely abandoned, under the advice of the Chief Engineer of Highways; but existing macadam pavements have been repaired and resurfaced when necessary.



* A SECTION OF COBBLE PAVEMENT ON DEKALB AVENUE, NEAR NOSTRAND AVENUE.

THE ASPHALT PROBLEM.

During the four years of the last administration an extravagant price per square yard was paid for asphalt pavement. This was due, among other causes, to the fact that an asphalt trust had succeeded in stifling all competition. Contracts at a rate far above the market value of the work and material called for in the specifications were uniformly awarded to the combination. The loss sustained by The City of New York through such an abnormal state of affairs was very large.

It was my duty, as President of the Borough, to take such measures as would stop this leakage from the public treasury. It seemed to me that the existence of an asphalt trust was largely due to the fact that the contracts and specifications were designedly drawn so as to favor a monopoly. In the early part of last year, therefore, with the assistance of Commissioner Redfield and Chief Engineer Lewis, who at that time was in charge of the Bureau of Highways in this borough, I drafted a contract and specifications in such form as to throw the door wide open to free competition. The draft thus prepared was submitted to the Board of Estimate and Apportionment and approved by that body with only a slight modification. Competition for paving and repaving with asphalt was thus made free and open, not only in theory, but in fact. It was understood that, in pursuance of the terms of the advertisements, contracts would be awarded to the lowest *bona fide* bidders and that competition was not to be choked off. As a result of this new policy, contracts for asphalt pavement, including the concrete base and the guarantee of maintenance for five years, have been made at an average price of \$1.79 per square yard, as compared with the average price of \$2.83 per square yard paid to the asphalt trust in 1900 and 1901 for similar work on similar terms. This was such a startling difference in the cost of asphalt pavement and raised so serious a question as to the exorbitant rates charged and paid for such work during the last administration that every effort was made

to frustrate the intentions of this Department to execute certain contracts which had been awarded to the Interstate Paving Company as the lowest bidder. On July 3, 1902, a temporary injunction was granted by Mr. Justice Gaynor restraining the President of the Borough of Brooklyn and the Commissioner of Public Works, as defendants in the proceeding, from carrying out these contracts. This was a test case. The plaintiff alleged that the Interstate Paving Company was not able to supply asphalt of the quality and in the quantity demanded by the specifications and contended that the execution of such contracts would constitute a waste of the public funds. The injunction was, however, subsequently dissolved and there were no further proceedings in the matter. The Interstate Paving Company alleged that the asphalt used in its paving operations came from the Goleta Mine, More's Landing, about 15 miles from Santa Barbara, California, and that this mine contained a sufficient deposit of natural bitumen of the required quality to enable it to carry out any contract into which it might enter. In order to remove all doubt on this subject, Mr. James D. Schuyler, a well-known consulting engineer and expert in the chemical analysis of asphalt, was engaged by this Department to examine the quality and quantity of asphalt that could be obtained from the Goleta deposits. His report was an assurance that there was abundant material in the mines for carrying out the paving contracts contemplated in this borough. Mr. Schuyler forwarded to this Department twenty samples of the Goleta asphalt, which were analyzed in the chemical laboratory of the Bureau of Highways in this borough and proved to be of the quality demanded by the specifications.

The following statement shows in detail the number of miles of pavement contracted for in 1902, as compared with the paving and repaving mileage of the previous four years, excluding cobblestone and Belgian block pavement (discarded types), of which a fraction more than 2 miles only were laid during the four years of the last administration.



COBBLE PAVEMENT ON FIFTY-FIFTH STREET, WEST OF FOURTH AVENUE.

Table Showing the Amount of Paving and Repaving for which Contracts Were Executed in 1902 as Compared with the Previous Four Years.

KIND OF PAVEMENT.	4 YEARS, 1898, 1899, 1900, 1901.	KIND OF PAVEMENT.	1 YEAR, 1902.
Asphalt	27.19 miles.	Asphalt	30.01 miles.
Granite	6.38 "	Granite	8.09 "
Macadam	3.23 "	Macadam.....	1.51 "
Trap-block	1.09 "	Trap-block	.17 "
.....		Medina sandstone.....	.18 "
.....		Wood.....	.08 "
Total mileage.....	37.89 miles.	Total mileage.....	40.04 miles.

It will thus be seen at a glance that more miles of modern pavement were put under contract in the single year 1902 than during all the four previous years. In other words, four times more work of this character was done last year than was averaged in any one year of the last administration.

This large volume of work was performed under the able direction of Commissioner Redfield and Chief Engineer Tillson, despite the fact that they were hampered by delays which compelled them to postpone the commencement of operations until late in the working season. These delays were caused by my inability to secure an early appropriation for repaving, because of the fact that the Board of Estimate and Apportionment was continuously occupied, during the first three months of 1902, in the revision of the budget for that year. The appropriation for repaving, which should have been authorized in January, or at the latest in February, was not authorized until the middle of April.

As already stated, the average price per square yard for asphalt pavement, including concrete base and the guarantee of maintenance for five years, was in 1900 and 1901 \$2.83 and in 1902 \$1.79. This makes a difference of \$1.04 per square yard. The final disposition of this extra dollar has not

been definitely established; but there is no question that it was paid by The City of New York. The probability is that it was evenly divided between the asphalt trust and certain politicians. It is manifest, however, that this excessive price not only increased the tax burden but also restricted the quantity of repaving work.

The total amount of contracts executed for repaving from January 1, 1898, to January 1, 1902, was \$1,580,877.06. Contracts for that purpose have been executed this year to the amount of \$1,399,919.17. With the smaller sum, however, a much greater volume of work was done, owing to the decrease in the cost of asphalt pavement.

AMENDMENT OF CHARTER AUTHORIZING INCREASED APPROPRIATION.

Under the provisions of section 169 of the Greater New York Charter the Board of Estimate and Apportionment was authorized to issue corporate stock annually to the amount of \$2,000,000, without the concurrence of any other public body, for the purpose of repaving the streets, avenues and public places of The City of New York. If this sum was divided among the five boroughs, the share received by Brooklyn would not have been proportionate to its needs. I prepared, therefore, and presented to the Legislature a bill amending subdivision 10 of the said section, so as to permit the issue of corporate stock to the amount of \$3,000,000, instead of \$2,000,000. This proposed amendment was adopted by the late Legislature and approved by the Governor. It enabled the Board of Estimate and Apportionment to appropriate the sum of \$1,200,000 for paving purposes in this borough. The people of Brooklyn appreciate the kind offices, in this respect, both of the Legislature and the Board of Estimate and Apportionment.

IMPROVED METHOD OF LAYING GRANITE PAVEMENTS.

Prior to last year granite pavements were generally laid on a sand foundation. The result was that in a short time the surface became uneven and depressed in certain places, thus making vehicular traffic over it exceedingly uncomfortable. Moreover, the constantly recurring necessity of repaving and repairing made it very costly to maintain. It is difficult to understand how such an unintelligent and expensive system of laying pavements could ever have been tolerated. At the beginning of last year this faulty method was abandoned except in the case of work for which contracts had been previously executed, and a definite policy was inaugurated, which required that all granite and asphalt pavements should be thereafter laid on a solid concrete foundation. The effect will be to make such pavements both durable and permanent.

The increased cost at the beginning will be more than offset by the fact that repairs will not be needed for many years to come.

TEARING UP NEWLY LAID PAVEMENTS PROHIBITED.

Another evil which has prevailed in Brooklyn to a large extent has been the frequent tearing up of pavements, soon after they were laid, for the purpose of constructing sewers or of laying water-mains. Such a reprehensible lack of system and unnecessary waste of public funds should not be permitted to exist.

Under the present administration a rule has been adopted which prohibits the laying of any pavement until all sub-surface improvements are first made.

NEW RECORD IN STREET REPAIRS.

The Repair Division of the Bureau of Highways is charged with the duty of repairing and keeping in good condition 458.38 miles of pavement, which are classified as follows:

Granite	125.47 miles
Cobblestone	193.85 "
Belgian	46.48 "
Macadam	86.34 "
Brick	4.90 "
Trap-block	1.08 "
Miscellaneous	0.26 "
Total mileage.....	458.38 miles

This, it will be observed, exceeds the total mileage of paved streets in the Borough of Manhattan.

In addition to the foregoing there are several hundred miles of dirt roads and unpaved streets which are required to be kept in repair and maintained in proper condition.

Asphalt repairs are not included in the above table because they are made by contract, according to the amount of material used.

I have already alluded to the fact that there is no pavement in the world so expensive to maintain, so difficult to keep clean, so hard on vehicles, so ugly, wretched and unwholesome in every respect, as cobblestones. To the observant visitor Brooklyn appears to be a perfect wilderness of cobblestones. At the beginning of last year there was a larger mileage of such streets in this borough than the total mileage of streets in the Borough of The Bronx. It was evident that the appropriation of \$1,200,000 for repaving would hardly do more than make a respectable beginning in freeing Brooklyn from this unsightly pavement. When all the repaving work contracted for in 1902 is completed, there will still remain 186 miles of cobblestone streets. Of these many have never been repaired since they were first laid. This is also true in the case of some of the granite paved streets. Miles upon miles of the thoroughfares in this borough were found, at the beginning of this year, to be in a disgracefully dilapidated, not to say dangerous condition.

A special force of skilled men, under the supervision of Assistant Engineer Fort, was organized for the purpose of

repairing and relaying as many of these streets as possible. The record made by this force is absolutely unique. Forty-seven miles of defective streets were relaid and put in first-class condition. Thus between 80 and 90 miles of thoroughfares were either entirely repaved with the best modern pavement or relaid in the most substantial manner.

It was determined early in the year to inaugurate a system of awarding cash prizes and certificates of merit to those employed in the repair gangs connected with the Bureau of Highways and to certain of the employees in the Bureau of Sewers. The fund from which these prizes were to be paid was raised by private contribution. The purpose of the proposed awards was to encourage and stimulate the men to put forth their best efforts. The result has been exceedingly gratifying. It shows a marked improvement in the amount and character of the work performed.

Assistant Engineer Fort, under whose supervision the work of the Highway gangs was done, reports as follows:

"The offering of prizes to the men for the most efficient work by the Commissioner of Public Works and the Borough President proved to be a helpful stimulant in almost all cases, and I think that the honor of having won a certificate of merit is appreciated by every man who received one. * * * The work of repairing streets is not one that easily kindles the imagination or arouses the enthusiasm. Dull detail and routine do not ordinarily call forth one's best efforts. It is all the more creditable, therefore, that their co-operation has been generous and enthusiastic."

An experiment will be tried this year which, it is believed, will lead to satisfactory results in the direction of economy. It is proposed to use the force in the Bureau of Highways to repave a few streets with granite blocks, instead of letting the work by contract. A careful record will be kept, so as to show the cost of doing the work by the Department force, as compared with the cost of doing it by contract.

IMPROVEMENT OF SIDEWALKS.

Under the law property-owners are primarily charged with the duty of laying sidewalks and maintaining them in a safe and proper condition. If a property-owner neglects his duty in this respect, the Bureau of Highways steps in and does the necessary work, the expense thereof being charged against the delinquent owner. The law imposes upon The City of New York the duty of compelling property-owners to keep their sidewalks in a safe condition for the use of pedestrians. If the City fails in its obligations in this respect it is liable in damages to any person who sustains injuries from a defective sidewalk. Each year the City is mulcted in damages for such accidents, amounting in the aggregate to many thousands of dollars.

An inspection of the sidewalks in this borough at the beginning of the year disclosed the fact that they were generally in a defective and dangerous condition. This was true not only in residential, but also in business streets. In some neighborhoods it was found that there were no sidewalks of any kind. It does not appear that in former years any systematic effort was made to improve this condition of things. The work of applying a remedy was taken up in earnest last year by the Bureau of Highways and was attended by most satisfactory results. Six thousand five hundred and eighty-seven notices to repair sidewalks were served upon property-owners, who, in the majority of cases, not only complied with the requests thus made, but did so willingly.

In his report on this subject, Commissioner Redfield states:

"It is gratifying to record the good will and promptness with which these requests have been met by the public. In one street over 90 per cent. of the requests to repair sidewalks were at once granted by the property-owners, and there has been no hesitation to undertake the work by any considerable number of the citizens notified."

The following table shows in detail the amount of flagging and cement sidewalks contracted for during the year 1902:

1902.	Square Feet.
Bluestone flagging (public contract).....	138,140
Bluestone flagging (private contract).....	162,909
Reflagging done.....	3,874
Concrete sidewalks (public contract).....	143,500
Concrete sidewalks (private contract).....	628,060
Total	<u>1,076,483</u>

It must be borne in mind that the work done by private contract was performed at the instance of the Bureau of Highways.

The following figures, taken from Commissioner Redfield's report, show the amount of similar work done during the years 1898, 1899, 1900 and 1901:

	Square Feet.
Bluestone flagging.....	143,122
Concrete sidewalks.....	68,094
Total for four years.....	<u>211,216</u>

The campaign against defective sidewalks will be continued during the present year, with the expectation that, before another year rolls around, all the sidewalks in this borough will have been put in a reasonably safe condition.

HIGHER STANDARD OF WORKMANSHIP DEMANDED.

In connection with the Bureau of Highways a chemical and physical testing laboratory was established in the early part of the year and placed in charge of Mr. W. H. Broadhurst. It has been fully equipped with new and modern apparatus. In addition to its ordinary routine work this laboratory is required to examine samples of cement, asphalt, binding mixtures, etc., and to inspect asphalt plants at the time the work of manufacturing the pavement mixture is in actual progress.

There are many causes which operate to produce defective asphalt and the work of preparing it requires close inspection and careful attention to detail. If defects are discovered in the process of manufacture the contractor is at once ordered to stop work. Samples of the ingredients, before and after mixing, are analyzed, the defects, if any, ascertained, and the contractor is notified to make the required change in formula.

Thirteen hundred and eleven samples of asphalt and binder mixtures, hydraulic cements, etc., were examined in the course of the paving and repaving work done last year. The utmost possible care has been exercised in the supervision of the work, with the result that the quality of the pavements laid during the year has never been excelled in this borough. Not only in this branch of work, but in the operation of the other bureaus throughout the Department, the highest standard of workmanship has been demanded. Contractors have been given to understand that slipshod methods would not be tolerated. In some instances, notably in the case of the Interstate Paving Company, contractors have been compelled to tear up defective or unsatisfactory work and do it properly.

In municipal, as in other work, the best without regard to cost is the cheapest in the long run. It has too often been the case in the past that cheap municipal work has been authorized simply because it was cheap. I have already referred to an instance of this in the case of laying pavements on a sand foundation. The penny-wise, pound-foolish policy of contracting for work because its first cost was slight, without taking into consideration its lasting qualities, has been, I trust, permanently abolished.

THE BIRTH OF A NEW BROOKLYN.

The work of transforming this borough into an attractive and wholesome place for residential purposes has begun in earnest. The shabby aspect, which it gradually assumed after consolidation, is fast disappearing.

The improvement wrought in its highways during the year just closed has had the effect of toning up the whole borough. Its growth and development have been given a fresh impetus. Real estate values are already beginning to increase in many sections and will increase more rapidly when improvements already authorized have been effected.

Eighty-seven different and distinct thoroughfares have been paved with the finest modern materials. Forty-seven miles of other thoroughfares, which were in a wretchedly dilapidated condition, have been thoroughly renovated.

The policy announced at the beginning of the year, to the effect that smooth pavements would be laid around hospitals and schools before similar work was done on other thoroughfares, has been carried out to the great advantage of inmates and pupils.

Asphalt pavements have been laid adjoining thirty-one school-houses, twenty-five churches and nine hospitals.

In some of the poorer sections, where there is a large tenement-house population, cobblestone streets, which had become indescribably foul by reason of the ruts and holes in which stagnant water and disease-breeding filth had collected, have been repaved with new, smooth asphalt, which is washed clean by every rainstorm. The surrounding atmosphere has thus been rendered pure and wholesome.

The often promised but long deferred improvement of Third avenue, one of the longest and destined to be one of the most important highways in this borough, has been undertaken, and the work of regulating, grading and paving it has been almost completed.

Fourth avenue, for a distance of one mile, between Fortieth and Sixtieth streets, has not only been asphalted, but also beautified. A green park, twenty feet wide, has been laid out through the centre of it, and through the kind co-operation of Mr. Richard Young, Commissioner of Parks for the Boroughs of Brooklyn and Queens, has been planted with trees and shrubs. The roadway on each side has been asphalted. This splendid

improvement will be continued northward this year for another mile and possibly for the whole length of the avenue. This is one of the most important of the improvements which have been undertaken during the year, and will have the effect, when completed, of transforming Fourth avenue into a most attractive thoroughfare.

Streets which, through lack of system, had been asphalted in isolated blocks only and which had, in consequence, alternate spaces of asphalt and cobblestone pavement, have been completed by asphaltting the stretches of cobblestones, thus giving continuity to the improvement.

Extensions of many important thoroughfares partly paved with asphalt and granite have been undertaken and in many instances completed. In this connection I quote from Mr. Redfield's report:

"One can now ride over smooth pavements from the heart of the Fulton street shopping district nearly to the Queens County line, via DeKalb, Willoughby avenue and Suydam street. When contracts now made for Third avenue are completed, a similar route over modern pavements will exist from the borough's centre to the lower bay. By the improvement of Flushing, Willoughby and Clermont avenues, with connections in the Williamsburg district, routes have been made connecting the Brooklyn Bridge with the Williamsburg Bridge, which will be extended in 1903. A further through route has been made adjoining and parallel to Fulton street by repaving Lefferts place and Herkimer street, providing a direct route over asphalt pavements from St. James place eastward to Albany avenue. This will be extended to the Twenty-sixth Ward in 1903. * * *

Albany avenue has been extended with asphalt through to Lincoln road, from which point to Clarkson street a macadam pavement is under contract. This joins another macadam improvement on Clarkson street, thus making a through connection to Flatbush avenue, and via Woodruff avenue, just asphalted, to Ocean avenue and so to all the borough beyond.



THE NEW PART OF FOURTH AVENUE, NEAR FIFTIETH STREET, LOOKING SOUTH.

This provides an entirely new and separate route to the southern outlying parts of Brooklyn without going through or near Prospect Park, and enables one to go one way and return another. It also provides what is more important, a means of quick access for fire engines in case of fire in any of the county buildings on or near Clarkson street."

REPAVING BY STREET RAILROAD COMPANIES.

Section 98 of the Railroad Law of the State of New York provides that "every street surface railroad corporation, so long as it shall continue to use any of the tracks in any street, avenue or public place in any city or village, shall have and keep in permanent repair that portion of such street, avenue or public place between its tracks, the rails of its tracks and two feet in width outside of its tracks, under the supervision of the proper local authorities, and whenever required by them to do so, and in such manner as they may prescribe. In case of the neglect of any corporation to make pavements or repairs after the expiration of thirty days' notice to do so, the local authorities may make the same at the expense of such corporation."

This statute had been persistently ignored by the Brooklyn Heights Railroad Company and many miles of streets in this borough have been allowed to lapse into a condition that was absolutely dangerous to the public. That corporation had refused or neglected to carry out the instructions of the local authorities, who had duly and in accordance with law called upon it to keep in permanent repair such portions of the streets, avenues and highways used by it. Inasmuch as The City of New York is primarily liable for damages resulting from a dangerous condition of its roadways, the former Department of Highways and the present Bureau of Highways were obliged, from time to time, to do repaving work between the tracks, the rails of the tracks and two feet outside the tracks, a duty which was directly chargeable upon the said company. I instructed

the Law Department to institute legal proceedings against the said company, to recover the amount expended by The City of New York in such repaving operations.

The Brooklyn Heights Railroad Company was so persistent in its refusal to discharge its statutory obligations to the public that, when it bid for the right to construct the Manhattan-Brooklyn tunnel, I felt it to be my duty to oppose its application. On July 21, 1902, therefore, I transmitted a letter (Appendix 1) to the Board of Rapid Transit Railroad Commissioners, in which I expressed my conviction, and, I believe, the opinion of my fellow citizens in this borough, that the Brooklyn Heights Railroad Company, or the Brooklyn Rapid Transit Company, or any corporation controlled by it, should not be awarded the tunnel contract, because of its failure to live up to its obligations.

I received an answer to this communication, in which President J. L. Greatsinger, on behalf of the Brooklyn Heights Railroad Company, made a general denial of my allegations. But subsequently representatives of that corporation called at my office and acknowledged that my charges were well founded and promised that in future the law relating to repaving would be strictly obeyed.

I am glad to say that this agreement has been faithfully observed, and that the Brooklyn Heights Railroad Company has already done a very considerable amount of work along the lines it operates in this borough.

UNUSED STREET RAILROAD TRACKS.

It was found that in some of the streets of this borough there were unused car tracks, which, in course of time, had lapsed into bad condition and seriously interfered with traffic. This was especially true of Humboldt street, between Meeker avenue and Grand street. The Brooklyn Heights Railroad Company had agreed with the former Department of Highways to remove the double tracks on Humboldt street, from Meeker avenue to Grand street, as well as the overhead wires and poles, and to

restore the street to its former condition. On February 11, 1902, I notified the said company that it was required, within a reasonable time, to carry out this agreement. On June 13, 1902, the tracks on Humboldt street were torn up, under the direction of the Chief Engineer of Highways, and the road was restored to its former condition by the Repair Division of that bureau.

In pursuance of the same policy, unused car tracks were removed from (1) the siding on Fifth avenue, at Twenty-fifth street; (2) the siding on Thirty-ninth street, between Second and Third avenues; (3) the siding on Flushing avenue, between Marcy and Nostrand avenues; (4) the siding on Nostrand avenue, between Park avenue and Floyd street; (5) on Bush street, and (6) on Prospect Park West (Ninth avenue), between Ninth and Fourteenth streets.

The roadways in all these cases were repaved by The City of New York. It was agreed between this Department and the Brooklyn Heights Railroad Company and the Coney Island and Brooklyn Railroad Company, respectively, that the tracks so removed might be replaced, provided, however, it shall be shown that such restoration is necessary for the convenience of the public or the proper operation of the railroad with which they would connect.

STREET SIGNS.

The streets, avenues and highways of the former City of Brooklyn were not laid out originally on a uniform plan. The modern division into rectangular blocks was not adopted until a few years ago. The thoroughfares, therefore, of this borough are irregular in their arrangement and confusing to strangers, because a street designated by a name instead of a number is not suggestive of location. To minimize this disadvantage, signs, legible, however, only by day, were from time to time placed at every street corner. Many of these have disappeared, either because they were maliciously destroyed or because they were not properly maintained by the local authorities.

During the year 1902 a contract for 4,000 blue and white enameled signs had been entered into, and over 2,700 of these have already been erected. The rest are being placed at suitable crossings as rapidly as possible. Under the contract, these signs are furnished and placed in position by the contractor at a cost of 56 cents each, a price lower than has ever been made before for the same quality of signs.

On May 20, 1902, the Board of Estimate and Apportionment appropriated the sum of \$18,000 for the construction, erection and maintenance of illuminated street signs in the Borough of Brooklyn. The designs were submitted to and approved by the Art Commission of The City of New York. The notice that bids for such work would be opened on August 13, 1902, was duly published in the corporation newspapers. The Electrical Reflector Company, the only bidder, proposed to furnish, deliver, erect and maintain for a period of three years on existing lamp-posts, fire-alarm posts and electric-light poles, and on any other posts or poles that might be erected, to be designated by the President of the Borough, one thousand sign boxes, with reflector attachment, at the rate of \$12.50 for each sign.

These reflector signs were a patented article and hence more or less of an experiment, and as their cost was rather extravagant, it was deemed prudent, before awarding the contract, to compel the contractor to demonstrate their adaptability to the unusual conditions existing in this borough. These signs had been tried in Manhattan and had proved fairly successful, but the type of lamp and pole used in that borough differs radically from that which is in use here. Samples of these signs were erected at various street intersections in Brooklyn and proved so unsatisfactory that I could not do otherwise than reject the bid of the contractor. Their failure in this borough was due simply to the fact that the electric lamp was swung at too great a distance from the sign, a difficulty which could not be remedied except by using a different kind of pole.

A new type of illuminated sign which is not patented has been selected which, it is believed, will answer the purpose for which it is designed. Upon this point I quote from Mr. Redfield's report:

"Investigation has been made of a type of illuminating sign which is lighted by gas or electricity from within, and a satisfactory pattern has been found which has been approved by the Municipal Art Commission. Specifications have been obtained and it is expected early in 1903 to let the contract for a considerable number of these signs, both for gas and electric lamps, on our principal thoroughfares. In addition to the above, arrangements have been made for adding to the number of plain glass signs in the ordinary gas lamp posts and for replacing those that are broken. The above item of Welsbach lamp signs, also those that are on the ordinary gas lamps and on the capped lamp posts, have recently been turned over to us by the Department of Water Supply, Gas and Electricity, which has heretofore given them care; by consent we have taken up this work, and the whole matter of street signs is now concentrated in the hands of the Bureau of Highways."

PROPOSED CHANGES OF STREET NOMENCLATURE.

There are many thoroughfares in this borough which are now designated in duplicate or whose names are so similar as to lead to confusion. This was not due to any failure on the part of former local authorities to exercise intelligent supervision over street nomenclature. It resulted from the consolidation with Brooklyn of several independent townships, the names of whose thoroughfares were, in many cases, identical with those used in other communities.

When we realize that the present Borough of Brooklyn has absorbed Williamsburg, Greenpoint, East New York, Woodhaven, Flatbush, Flatlands, Gravesend, Canarsie, Coney Island, Unionville, Bensonhurst, Bath Beach, Fort Hamilton, New Utrecht, Blythebourne, Bay Ridge, Parkville, West

Brooklyn, Mapleton and Windsor Terrace, it is not remarkable that a change in street names is imperatively demanded. These conditions have, it is needless to say, subjected business houses and express companies to uncertainty and delay in the delivery of goods. One of the superintendents of the General Post-office in this borough has asserted that Brooklyn has absolutely the worst system of street nomenclature and confusion of names of any city in the world. Many complaints to this effect have been made in this office. For example, we have First street (No. 361 Hoyt street southeast to Prospect Park West); First street (Franklin avenue and East Eighth street southeast to Foster avenue); Bay First street; First avenue; First place (No. 587 Henry street southeast to Smith street); and First place (Lake street south of Village road east to Gravesend avenue). There are many other instances not so involved, but almost as bewildering as the above list.

On July 23, 1902, I appointed Messrs. Hiram S. Steele, Christian J. Bode, Allan Bowie, Peter Burden, John B. Creighton, Edward F. Linton and I. S. Remson, as a non-salaried commission to devise new names for such streets, avenues and public places in this borough as are now designated in duplicate. They have completed their important work and their recommendations are embodied in a report which I trust will be made operative, at least in part, by the affirmative action of the Board of Aldermen.

REFORMS AND ECONOMIES IN SEWER ADMINISTRATION.

Upon the coming in of the new administration it was found necessary to reorganize the Bureau of Sewers from top to bottom.

Evidences of reckless extravagance and gross neglect were found on every hand.

When Superintendent Thatcher took charge of this Bureau on January 1, 1902, he found the repair yard on North Portland avenue "sparsely equipped with supplies and tools, but overstocked with men." Incredible as it may seem, six men

had been detailed to take care of four horses, one of which was a broken-down animal of no value whatsoever. These men had no other work assigned to them than to attend to these horses when they were in the stable; but it is gratifying to be able to record that the difficulties they encountered in trying to kill time were somewhat mitigated by the solace of pinoche. Forty-five men were employed in this yard, drawing their pay regularly from the City. Twenty of this number were dismissed and their places abolished. The force was thus reduced nearly one-half, but the reduced force, under proper discipline, was able to accomplish nearly three times as much work during 1902 as the larger force performed in 1901.

A worse state of affairs, if such were possible, was found to exist in the four sewage purification works operated by this Bureau. This was due to the fact that the appropriation was exhausted at the end of October, in order to meet the demands of padded pay-rolls. The operation of these works was practically suspended during the last two months of 1901, thus imperilling the health of the whole community. This condition of things applied to the whole of the Maintenance Division of the Sewer Department.

At Caisson No. 4, located at Sheepshead Bay, the building was found so badly out of repair as to render it practically uninhabitable. If the roof had ever been repaired, there was not the slightest evidence of such work having been done. It was rotten throughout and leaked in so many places that the workmen within the building were obliged to go around with umbrellas. It was found necessary, therefore, to make many extensive repairs.

The main pump of this plant had been almost completely wrecked, through the neglect of the engineer in charge of it, so that it had to be replaced by a new one of a different type, with the result that the service has doubled, while at the same time a saving in fuel of 33 per cent. was effected.

In commenting upon the condition of this building, Mr. Redfield says in his report: "In an extended experience with

machinery, I have never seen a worse case of a fine plant ruined by carelessness and neglect than in this Caisson No. 4."

The operation of purifying sewage, so necessary to the health and comfort of our citizens, was almost suspended for about a year and a half prior to January 1, 1902. The plant for the making of chlorine gas had been dismantled and was out of condition and unfit for use during the whole of that period.

At Caissons No. 2 and No. 3 similar evidences of neglect were everywhere apparent. The buildings were in a dilapidated condition, requiring extensive repairs and the construction of new roofs. It was found necessary to install a new boiler as well as new pumping plants and to purchase scales for weighing coal. Although these plants use an enormous amount of coal in the course of a year, no scales were found, a fact which indicates that no tallies were kept of the amount of coal received.

The following comparative table will be found of interest. It shows the number of men employed during 1902 in Caissons Nos. 2, 3 and 4 as compared with the number employed therein during 1901:

1902.		1901.	
Superintendent	1	Superintendent	1
Engineers	7	Engineers	6
Firemen	9	Firemen	8
Foreman	1	Foremen	2
Laborers	14	Assistant Foreman.....	1
		Carpenter	1
		Watchman	1
		Laborers	43
Total force in 1902..		Total force in 1901..	
	32		63

The reduction of this force has effected a saving to the City of 44 per cent. in the one item of labor.

An inspection of the Twenty-sixth Ward Disposal Works disclosed a better condition of things in respect to the building and machinery than was found in the other plants. This was naturally to be expected, as it is a comparatively new plant.

But here, also, there were no means of ascertaining the quantity of coal delivered, as scales were not a part of the equipment.

Scales have now been provided for these plants, and all coal delivered is carefully weighed and a record kept of the exact quantity received.

The number of sinecurists and political favorites appointed to positions in this particular plant is indicated by the following table, which shows in detail the number of employees in 1902 as compared with the number engaged therein during the preceding year :

1902.		1901.	
Superintendent	1	Superintendent	1
Engineers	2	Engineers	3
Firemen	4	Firemen	6
Machinist	1	Foreman	1
Laborers	13	Plumber	1
		Machinist	1
		Laborers	30
Total force in 1902..	21	Total force in 1901..	43

Thus it will be seen that the force was reduced more than one-half. Twenty-two men were dismissed from this one plant, because there was absolutely nothing for them to do. They had been drawing pay from the City without giving anything in return.

The swelling of the pay-rolls had exhausted the appropriation so that a bill for \$37.50 for brick delivered in October, 1901, was not paid, and remains unpaid to this day.

The reduction of this particular force has effected a net saving to the City in the cost of labor of 48 per cent.

The weeding out of the idlers and loungers has had a markedly beneficial effect on the rest of the force. The efficient men have been retained and placed under a wholesome discipline. They have performed their duties not only efficiently, but zealously, and all the more so because of the elimination from their ranks of political favorites, who were permitted to idle

while the others did the work. All are now treated alike, a condition of things which the men greatly appreciate.

BUSINESS PUSH VERSUS POLITICAL PULL.

There are approximately 8,000 sewer basins in the Borough of Brooklyn. The duty of keeping these in a sanitary condition is devolved upon the Maintenance Division of the Bureau of Sewers. The importance of this work cannot be overestimated, because the health and comfort of the community depend, in a large measure, upon its proper performance.

A definite plan was laid out at the beginning of the year for the examination and cleansing, in a systematic manner, of all the sewer basins in the borough.

A special force of men, with horses and carts, was detailed to take charge of this branch of the work. A healthful rivalry between the several gangs was stimulated by the offer of prizes and certificates of merit for efficiency.

These prizes and certificates were awarded at the end of the year and were well earned, for in December the work of this Division of the Bureau was nearly brought to a standstill by the fact that there was not a single basin throughout the whole borough that was not in a satisfactorily clean condition.

This is a record of which the Bureau of Sewers is justly proud and, as Superintendent Thatcher states in his report, was gained "by simply using business push in place of political pull in the management of the work."

That a new record has been made in the Bureau of Sewers is apparent from the comparative tables which follow:

Basins Examined.

1898	13,576
1899	27,426
1900	36,073
1901	40,853
1902	61,816

Basins Cleaned.

1898	6,516
1899	8,596
1900	8,760
1901	9,241
1902	14,958

It will be seen from the above tables that 61,816 sewer basins were examined last year, as compared with 40,853 in the year 1901. It also appears that 14,958 basins were cleaned last year, as compared with 9,241 cleaned in 1901.

If we compare the force employed in 1902 to do this work with that employed in 1901, the record becomes more interesting because it makes the contrast more remarkable. The comparison is shown in the following tables:

1902.		1901.	
Foremen	6.	Foremen	6
Laborers	18	Assistant Foreman.....	1
Horses and carts.....	18	Laborers	28
		Horses and carts.....	32

Note may be taken of the fact that sinecurism under the last administration extended to horses and carts as well as to men.

Now, if we go a step further and compare the cost of cleaning sewer basins last year with that of the four previous years, we have this interesting result:

Comparative Cost of Cleaning Basins.

1898	\$4 75 per basin
1899	4 35 "
1900	4 46 "
1901	4 60 "
1902	1 96 "

Not only have all the sewer basins throughout the borough been put in first-class condition, but particular attention has been given to the cleaning and purifying of the main sewers. I have no hesitation in saying that this important public duty has never before been so thoroughly done in every section of

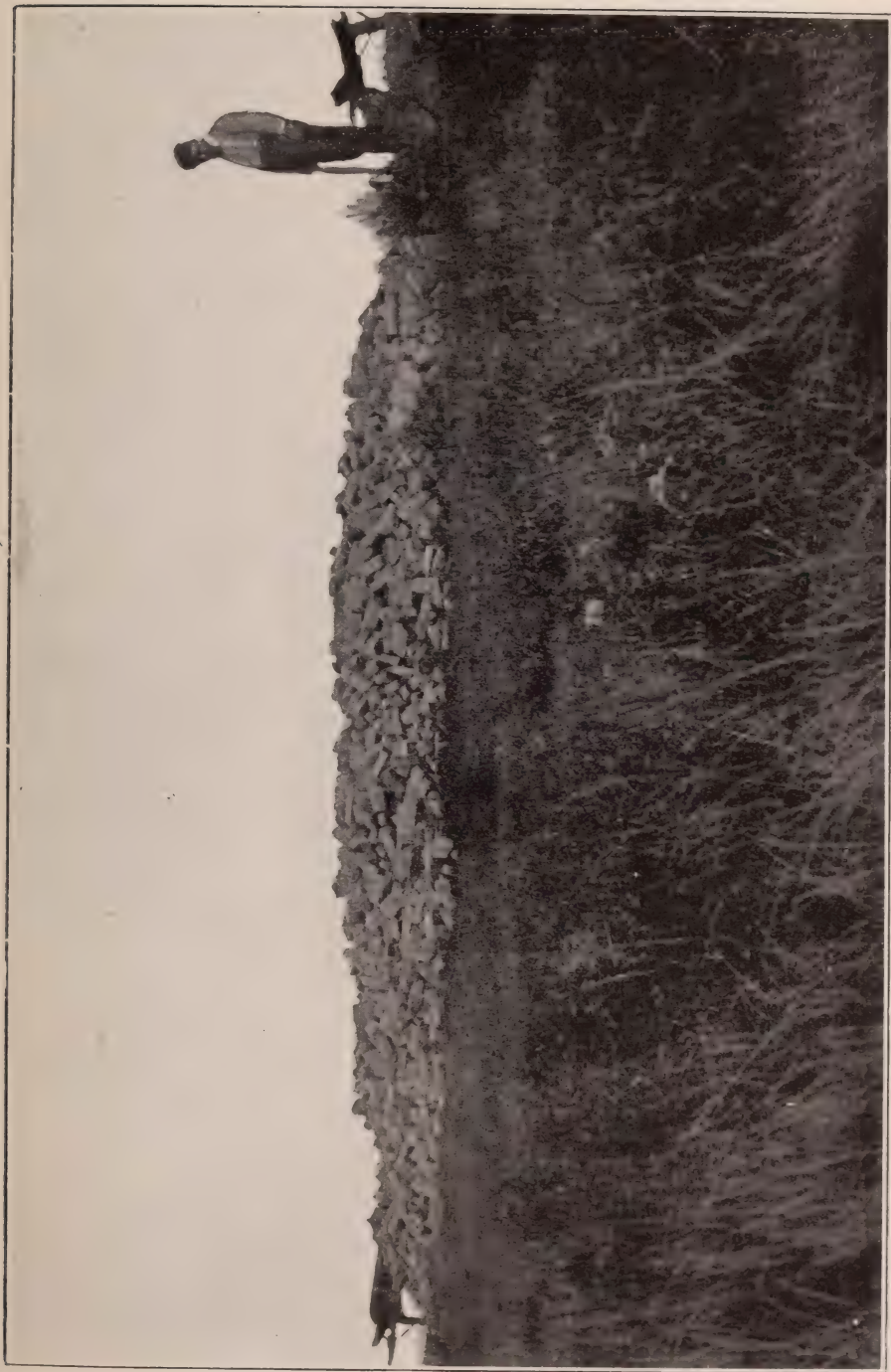
Brooklyn. Even at Coney Island, whose residents in former years complained so frequently and persistently of the foul condition of the sewers, the work has been so efficiently performed that not a single complaint has been received during the past year.

In one section of East New York it was found that the surface water collected during every heavy rainstorm, much to the discomfort of the residents of that section. Superintendent Thatcher made a personal tour of inspection through the Wortman avenue sewer for the purpose of locating the difficulty. He found the floor of this sewer choked up with great quantities of brick which some years previously had fallen from the roof as the result of the caving in of a portion of it.

It was ascertained that the contractor who had been employed to repair the break had bricked in the roof without removing the material which had fallen into the sewer. This was not mere carelessness. It was done deliberately in order to save the expense of removing the debris, thus evincing a wanton and reckless disregard of the public health and welfare. A photograph of the debris removed from this sewer by the force under Superintendent Thatcher forms a part of this report.

The economies which have been effected during the year in the various divisions of the Bureau of Sewers have been extended to the clerical staff in the office of the Superintendent. This force was found to consist of those who worked and those who idled. Among the latter there were some, doubtless, who were more to be pitied than blamed, who would have preferred work of any kind to the dull monotony of continuous inactivity. They did not render any services to The City of New York in return for their salaries, because there was not work enough to go around.

Notwithstanding the fact that the volume of work accomplished last year was largely in excess of what was effected in any previous year, it was found that fourteen positions could



DEBRIS IN WORTMAN AVENUE SEWER.

be abolished without impairing the efficiency of the force. The services of the following employees were therefore dispensed with as wholly unnecessary:

- 2 cashiers,
- 2 clerks,
- 1 messenger,
- 3 inspectors,
- 6 miscellaneous.

The total cost of the work in this borough with the performance of which the Bureau of Sewers was charged during the year 1902 amounted to \$4,034,819. This sum exceeds by over \$1,800,000 the expenditure incurred for such contractual work in any one of the years 1898, 1899, 1900 or 1901.

The cost of the contracts for new sewer work authorized by the Board of Estimate and Apportionment during the year 1902 amounts to \$2,170,848. Of these the most important are summarized as follows:

	Engineer's Estimated Cost.
Avenue G, from Coney Island avenue to Flatbush avenue, etc. (the so-called Paerdegat inlet sewer).....	\$266,700 00
Bedford avenue, from Flatbush avenue to Montgomery street.	150,000 00
Ninety-second street tunnel sewer, from New York Bay to Eleventh avenue.....	655,000 00
Sixtieth street, from Fourteenth avenue to Nineteenth avenue to Fifty-seventh street (first section of so-called Foster avenue sewer).....	298,300 00
Nineteenth avenue, from Fifty-seventh street to West street to Bergen lane to Foster avenue to East Ninth street (second section of so-called Foster avenue sewer).....	296,500 00
Foster avenue, from East Ninth street to Flatbush avenue, etc. (third section of so-called Foster avenue sewer)....	285,000 00
Scattered sewers throughout the borough.....	219,348 00
Total amount authorized.....	<u><u>\$2,170,848 00</u></u>

This total exceeds by more than \$1,000,000 the total amount of contracts authorized during the years 1898, 1899 and 1901.

In the great Bay Ridge Tunnel sewer the work has been

carried on continuously day and night, Sundays and holidays included. This is a magnificent example of engineering construction. With its laterals, it is the largest sewer in the world. Its diameter is so great that I was able, in the early part of last summer, to take the members of the Board of Estimate and other city officials on an automobile ride through a portion of the tunnel.

This important public improvement is practically completed from the water front to a point near Sixth avenue. During the progress of the work headings met from one shaft to another at two different places, and so accurate were the alignment and grade carried out by Engineer Asserson and his able assistants that in both cases an error in line of less than half an inch occurred when the headings met, the grades being perfect. The remarkable accuracy of this work and the mental strain these men were under as the headings approached the point where they finally met will be appreciated when I say that in tunnel work in other cities errors in alignment ranging from 3 feet to 10 feet have not been uncommon.

Mr. Nelson P. Lewis, Chief Engineer of the Board of Estimate and Apportionment, in his annual report to that Board for the year 1902, states that the sewer construction now in progress in Brooklyn "is the most important which has ever been undertaken, and the past year, which has seen so many improvements authorized and commenced, will always be a notable one in the history of Brooklyn."

RELIEF SEWERS NEEDED.

The work now progressing will, when completed, give Brooklyn the finest and most complete sewer system in the world. There is urgent need, however, of relief sewers in certain sections of the borough. I have already, on more than one occasion, brought this matter to the attention of the Board of Estimate and Apportionment, by requesting an appropriation for the construction of such sewers. No action, however,

has been taken, because the Board was under the impression that the cost of construction should be assessed upon the property to be benefited. I have not been able to accept this interpretation of the law. In my judgment the proposed improvement would benefit the Borough of Brooklyn taken as a whole and not any particular section.

The property-owners of Brooklyn have heretofore been assessed to pay the cost of existing sewers. It has been found that these were not constructed of sufficient size to carry off the surface flow of excessive rainfalls. The relief sewers now proposed are urgently required in order to remedy this defect. It is not intended to make house connections with these sewers, and they will perform, therefore, not a private but a public service. The estimated cost of the proposed sewers is approximately from \$250,000 to \$300,000, and should be met, in my opinion, not by assessment, but by the issue of corporate stock, the interest on which would be less than the amount of damages paid annually by The City of New York.

The record made by the Bureau of Sewers during the past year is a noteworthy one. The splendid results that have been accomplished would have been impossible but for the zealous co-operation of all the employees connected with that Bureau.

The members of the engineering corps have particularly distinguished themselves by the high character of their work. In this connection I quote from the report of Chief Engineer Asserson:

“They have performed their duties so quietly and so modestly that I am led to believe that in justice to them I should thus write, in order that the citizens of the borough whom they have so well served may not fail to appreciate their services; especially is this so when it is, I believe, conceded that no municipal work calls for more engineering skill than that required in this Bureau.”

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

This Bureau has cognizance and control of the construction, repairs, cleaning and maintenance of the public buildings within the borough, except schoolhouses, almshouses, penitentiaries and fire and police station-houses. At the present time it has under its care twenty-three public buildings and five floating baths. It is charged with the construction of various new buildings, such as the addition to the Hall of Records, two interior public baths and six public comfort stations.

Its jurisdiction includes the cleaning of the streets of Wallabout Market, and for this purpose it employs a force of laborers and drivers, with horses and carts.

It is also charged with the duty of erecting headstones for the graves of deceased veteran soldiers and sailors in the cemeteries of the counties of Kings and Queens, and of caring for the plot in Greenwood in which are interred the remains of the unidentified victims of the Brooklyn Theatre fire, December 5, 1876.

CONTRACTS INVOLVING EXPENDITURE OF \$1,000 OR LESS.

As the purchasing agent of the Department under my jurisdiction, this Bureau is charged with serious responsibilities.

Under the provisions of section 419 of the Charter the President of a Borough is permitted to contract, without public letting, for work or supplies if the contract does not involve the expenditure of more than \$1,000. The Borough administration can thus, without advertising in the corporation newspapers, authorize repairs, the purchase of any supplies, etc., provided that the statutory amount is not in any one case exceeded. This has always entailed a large annual expenditure. While it is proper that such authority should be vested in a Borough President, in order to provide for emergencies, it has been the policy of this Department, as far as practicable, to permit the element of competition to enter into such con-

tracts. Supplies have, therefore, been purchased and work authorized to be done, under the \$1,000 limit, at as fair and reasonable a price as would have resulted from public letting after advertising. The section of the Charter in question is subject, however, to adverse criticism, because it confers a very responsible power, free from the restricting force of publicity, upon the head of a department or a borough president.

A NEW FEATURE IN PUBLIC REPORTS.

I have annexed to this report a statement setting forth in detail the nature of all contracts made by this Department without public letting. It contains a schedule of all articles and supplies purchased and of repairs made, together with the cost of each article purchased or repair made; also the names of all business houses from which such supplies have been purchased, and of the contractors, mechanics, etc., who have furnished supplies and labor under the authority in question. I have done so because I believe that taxpayers are entitled to know how their money is spent, whether the expenditures are large or small. An examination of the items in this list will prove, I think, that a non-partisan municipal administration transacts the City's business with economy, even in matters involving what might be regarded as trifling expenses.

A detailed statement of this character, submitting to the lime-light of criticism and investigation all contracts executed without public letting, has not, I believe, been heretofore made in this or any other municipality.

The care exercised by Superintendent Helmle in the purchase of supplies and the authorization of repairs is evidenced by the fact that out of 3,221 orders for merchandise and repairs, aggregating in cost \$101,021.65, only eight vouchers, involving a total deduction of \$88.63, have been returned by the Finance Department.

ADDITIONAL OFFICE ACCOMMODATIONS.

The need of a new municipal building has been long recognized. The remarkable growth of the former City and the present Borough of Brooklyn has been attended by a proportionate increase of public work and a consequent multiplication of departments, bureaus and administrative offices.

The cramped conditions under which the work of the various departments is now done have seriously interfered with public business and have irritated county and city officials alike. The problem has been tentatively solved by a reassignment of rooms, which has changed the location of many offices. But the new arrangements are only a temporary expedient. The Appellate Division, Second Judicial Department, will be transferred, in compliance with the request of its Justices, to rooms formerly occupied by the Coroners and the Court of Special Sessions in the Borough Hall.

The time is close at hand, however, when it will be found necessary to construct and equip for that important court a building as commodious and architecturally attractive as that which has been erected in Manhattan for a similar purpose.

The present Municipal Building, which adjoins the Kings County Court-house, from an architectural standpoint, is an eyesore. While it serves the practical purpose of furnishing office accommodations to several county and city departments, it is not free from certain dangerous defects. The structure is antiquated and therefore not fireproof. It contains records of the most valuable character, the loss or destruction of which would entail very serious consequences in matters affecting the rights of The City of New York. It is not too much to say that, in my opinion, if a fire broke out in the building it could not be held in check. I therefore recommend that, if the construction of a new building is authorized, the present Municipal Building be torn down.

The need of a new Municipal Building is urgent, and is also desirable for economical reasons. The City of New York is at

the present time paying above \$100,000 per annum as rent for offices, etc., in this borough. A new building will obviate the necessity of this large expenditure.

It has been impossible up to the present time to concentrate in one locality all the machinery of the borough administration. I shall bring this matter to the attention of the Board of Estimate and Apportionment at an early date, and trust that an appropriation will be made by that body for the purpose of constructing a new Municipal Building on some site near the Borough Hall.

HALL OF RECORDS.

Under the provisions of chapter 647, Laws of 1900, The City of New York was directed to construct a new Hall of Records in the Borough of Brooklyn. The contract therefor was awarded on October 7, 1902, and the building is to be completed in one year and three months from the date of the execution of the contract. The estimated cost is \$398,700.

The legal instruments which, under the law, must be recorded in the office of the Register or in that of the County Clerk have increased in number in proportion to the growth and business development of Kings County. The work of the Surrogate has also increased in like proportion. It was necessary to furnish these officials with more room and better facilities for the transaction of their public duties. This important work is being done under the direction of Superintendent Helmle, and will be expedited as rapidly as possible.

FREE FLOATING BATHS.

The five floating baths, which were stationed at the foot of Thirty-ninth street, North First street, Noble street, Conover street and Bridge street, respectively, have ministered to a recognized public necessity. During the last summer months 1,000,000 persons availed themselves of these bathing places, a fact which demonstrates their value to the community, especially to the residents of the tenement districts. They contribute

in a marked degree to cleanliness and health, and must, therefore, be regarded as an important phase of public effort in this borough.

INTERIOR PUBLIC BATHS.

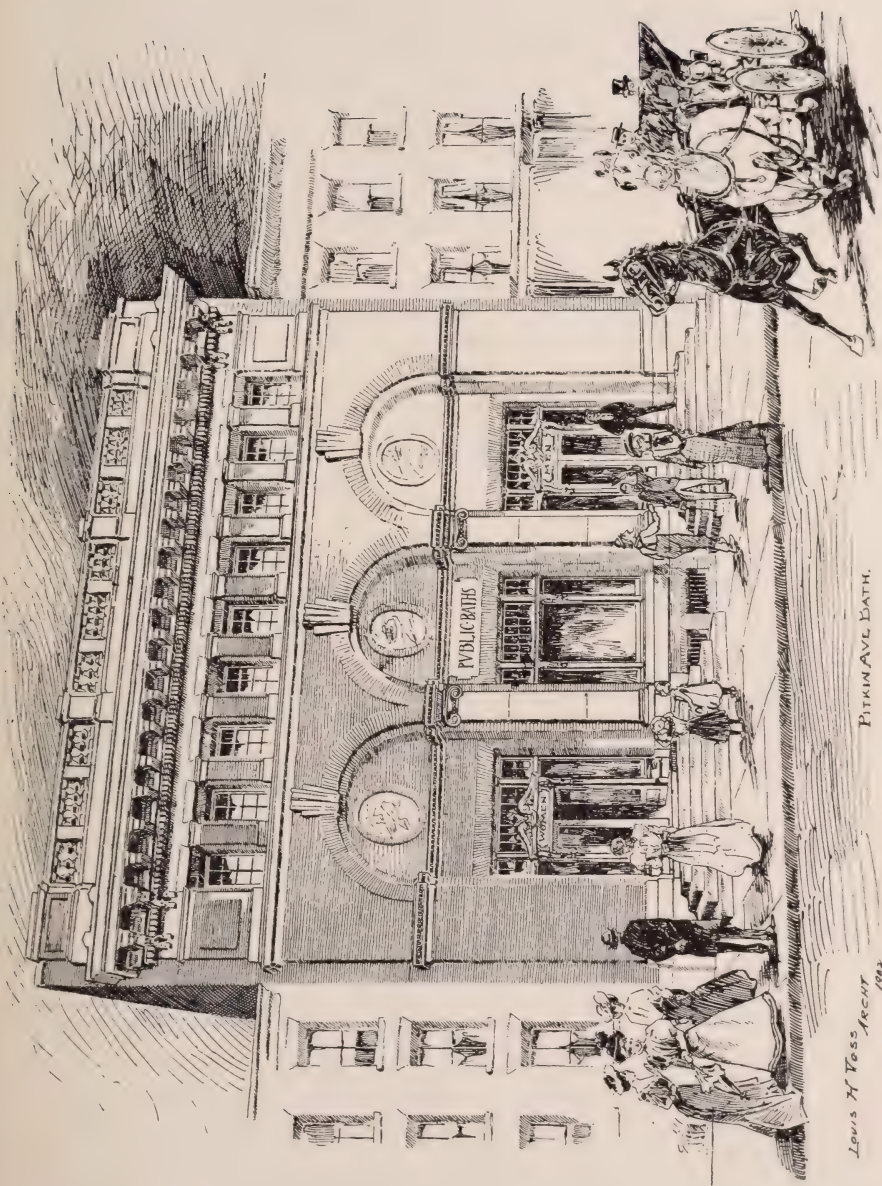
Unfortunately, the system of free baths has been restricted to the summer months. Churches, university settlements and charitable societies have for many years insisted that interior public baths should be constructed in the most congested districts of The City of New York and kept in operation all the year round. It was contended, and, I think, with justice, that such establishments should be provided by the municipality and not by private enterprise. Last year I requested and obtained from the Board of Aldermen and the Board of Estimate and Apportionment appropriations to the amount of \$155,000 for the purpose of constructing and equipping two such baths in Brooklyn, to be open winter and summer. One of these will be built on the west side of Hicks street, 214 feet 5 inches north of Degraw street, and the other on the south side of Pitkin avenue, 75 feet west of Watkins street. These locations are in the most thickly populated districts of the borough. The Hicks street bath will cost \$54,564, and the Pitkin avenue bath \$79,300. The contracts have been awarded, and it is expected that the baths will be opened for use before the autumn of 1903.

The plans have received the approval of the Art Commission, and the buildings will be architecturally attractive.

PUBLIC COMFORT STATIONS.

In one respect, at least, we are far behind the great cities of the old world. There are no public comfort stations in this borough, and only two in Manhattan and The Bronx. The fact that such a want of public lavatories has not been remedied up to the present time is discreditable, I think, to a city which, in other respects, is remarkable for its progressiveness.

The utility of such public conveniences has been amply proved in all municipalities in which they have been established. The objections which have been urged against them



PITKIN AVE. BATH.

Louis H. Toss
Arch't
1892

in this borough are based, I believe, upon a misconception of their character and equipment. They will supply a want which has been long felt in this community, as well as in all American cities. The partial prejudice which now exists will, I am convinced, disappear from the moment the residents of Brooklyn ascertain by experience that the proposed public comfort stations will be kept in as thorough a state of cleanliness as the lavatories of private houses.

I obtained from the Board of Estimate and Apportionment appropriations amounting in the aggregate to \$127,190 for the purpose of constructing six public comfort stations in this borough. The plans and locations have been approved by the Art Commission. The specifications require that these public lavatories shall be underground, and that no part of their construction shall appear above the surface except the ornamental hand-rail. The plans provide for two compartments; and competent attendants will be assigned to each station under the jurisdiction of the Superintendent of Baths.

The utmost care has been taken in order to secure absolutely hygienic conditions. The plumbing and equipment will be of the best modern type and the compartments will be thoroughly ventilated by means of a fan placed in the base of an ornamental lamp-post. The supply of air will be changed every ten minutes. There will be an entire absence of undesirable features.

Six of these public comfort stations have already been authorized, and will be constructed at the following locations:

- Junction of Greenpoint and Manhattan avenues.
- Junction of Richards and Rapelyea streets.
- Junction of East New York and Liberty avenues.
- Junction of Lorimer street and Broadway.
- Junction of Joralemon and Fulton streets, east of the Borough Hall.
- Junction of Flatbush avenue and Fulton street.

The above-mentioned locations, however, are subject to change.

BUREAU OF BUILDINGS.

The Bureau of Buildings exercises supervision over all edifices within the building line. It scrutinizes the plans before a permit is issued authorizing a contractor to commence work on a new structure or on alterations of an old one. It continues its inspection until the building is completed, and supervises architectural changes of every kind. In these respects it acts as the agent of the owner and protects his interests. Its services to the public are, therefore, very valuable.

In addition to the office staff there are forty-two inspectors of buildings, three elevator inspectors and fifteen inspectors of plumbing. The borough is divided into thirty-two inspection districts; and each inspector is charged with the duty not only of supervising every building in process of erection within his district, but also of reporting defects of construction which he may at any time discover.

The Bureau of Buildings is charged with the duty of inspecting all plumbing work in this borough, whether new or old. The proper performance of such work touches upon the vital interests of the people. Negligence of supervision in this direction would be inevitably followed by disease and death. The strictest possible care has been exercised, therefore, in this respect, by the inspectors of plumbing, and their reports are examined with the most painstaking accuracy by the staff of a sub-bureau established for that express purpose.

The floors of factories and department stores especially are inspected at regular intervals in order that the lives of operatives and employees may not be exposed to danger from defective construction or excessive weight.

The owners of unsafe buildings are required either to remedy the defective condition or to demolish them. Since January 1, 1902, 644 structures of this character have been torn down or made safe. In many cases the owners of buildings which the inspectors reported as in a dangerous condition complied with the regulations of the Bureau of Buildings, and

thus saved The City of New York a large amount of money which would have been incurred by the work of demolition. I quote with approval the following statement made by the Superintendent of Buildings, in his annual report, hereto annexed:

“ I have endeavored to construe the law liberally, rather than annoy and hamper the great building industry by petty and unreasonable restrictions.”

This Bureau is also charged with the duty of inspecting passenger and freight elevators, places of amusement, hotels, churches, etc. During the last summer, for the first time in Brooklyn's history, the machinery and equipment of all contrivances used at Coney Island for the conveyance of passengers, such as switchback railways, aerial slides, carousels, etc., were carefully inspected. The thoroughness of this new work, performed under the efficient supervision of Superintendent Calder, is shown by the fact that, although about 6,000,000 persons intrusted themselves to such mechanical contrivances, there was only one fatal accident, and that occurred before the device had received the approval of this Department.

The operations of this Bureau are, as might be expected from the extent of territory it covers, far greater in number than those of Manhattan and The Bronx. This is shown by the following table:

1902.	AREA.	NUMBER OF BUILDINGS FOR WHICH PERMITS WERE ISSUED.	PERMITS ISSUED FOR ALTERA- TIONS.
Manhattan	22.00 miles.	859	1,130
The Bronx.	40.50 “	882	336
Brooklyn	77.50 “	3,173	2,569

During the last administration the rules and regulations of the Department of Buildings were interpreted so as to require the installation of an automatic fresh air inlet valve in every

new building. Only one such valve was officially approved and its market price, therefore, was kept for four years, by the exclusion of competition, at the excessive figure of \$10 each. In January of last year two additional air valves were approved by the Bureau of Buildings, with the result that the original appliance can now be purchased by contractors for \$3.75.

A comparison of the pay-rolls for 1901 and 1902 will show the saving effected in this Bureau under the present administration:

Comparative Statement of Number of Employees and Salaries Paid in the Bureau of Buildings, as per Pay-rolls of December, 1901, and December, 1902.

DECEMBER, 1901.		DECEMBER, 1902.	
1 Commissioner	\$7,000	1 Superintendent	\$5,000
2 Superintendents.....	7,500	1 Assistant Superintendent.	4,000
1 Chief Clerk.....	3,000	1 Chief Clerk.....	2,400
1 Secretary.....	2,500	1 Secretary.....	2,000
8 Stenographers.....	8,640	4 Stenographers.	3,600
1 Telephone Operator	750	.....	.....
2 Engineers.....	4,300	2 Engineers.	4,500
9 Clerks.....	13,550	6 Clerks.	8,550
8 Messengers.	9,600	5 Messengers.....	5,250
3 Elevator Inspectors.....	3,900	3 Elevator Inspectors.....	3,900
48 Building Inspectors	68,250	42 Building Inspectors.....	60,100
19 Plumbing Inspectors ..	23,400	15 Plumbing Inspectors.....	20,900
103	\$152,390	81	\$120,200

This contrast is all the more striking in view of the fact that the buildings in this borough for which permits were issued in 1902 involved an expenditure of nearly \$2,000,000 more than the total cost of similar work in the preceding year.

The amount spent for contingent expenses, including car-

fares, postage, removal of unsafe buildings, etc., during the year 1901 was \$7,623.59, and during the year 1902, \$3,577.88.

The work of this Bureau has been performed during the past year with a saving of 23 per cent. in salaries and 53 per cent. in contingent expenses as compared with 1901.

BUREAU OF INCUMBRANCES.

There are no ordinances in The City of New York which require a more direct and, under some circumstances, a more liberal and politic interpretation than those which relate to incumbrances.

The operations of this Bureau have pressed at times with unreasonable severity upon business men who have been permitted in the past to place bales, boxes, etc., on the sidewalk.

It has been the policy of this Department to recognize the fact that a blind enforcement of the law in such cases made and provided would be an obvious hardship to many business men who are forced by absolute lack of other facilities to use the sidewalk temporarily for the purpose of receiving or sending out merchandise. There was room in this matter for a reasonable compromise. Where the law has been flagrantly and continuously violated the incumbrances have been summarily removed. But owners of incumbrances which were dangerous or irritating to pedestrians have been always requested, during the past year, both orally and in writing, to remove such obstructions themselves. As a result of this about 6,000 articles were voluntarily removed since January 1, 1902.

This important Bureau has been placed under the jurisdiction of Mr. Otto Kempner, Assistant Commissioner of Public Works, who has successfully applied to the performance of its responsible duties the effective principle of common sense. The extent and nature of the work transacted under his supervision is shown in the following statement:

Classification and Disposal.

Sidewalk signs removed.....	2,930
Slot machines removed.....	496
Showcases removed.....	111
Boulders removed.....	160
Trees and limbs removed.....	788
Push-carts and wagons removed.....	399
Coal boxes removed.....	115
Miscellaneous incumbrances removed.....	2,683
Total incumbrances removed of every description.....	7,682

CONTRACTS.

The preparation of contracts was assigned to the office of the Assistant Commissioner of Public Works. This important duty was performed with great care and legal accuracy. The delays necessarily involved in securing the approval of the Comptroller were thus reduced to a minimum.

During the past year 265 separate contracts for public improvements to be effected in this borough, involving a total expenditure of \$4,243,342.84, have been submitted to me for my approval and signature, and it is gratifying to know that of this number 241 have been registered in the Department of Finance, while only 24 are still pending.

LOCAL BOARDS OF PUBLIC IMPROVEMENTS.

The benefits that have accrued to the people of this borough from the amendments to the Charter and the policy of the present administration have been strikingly demonstrated in the work of the Local Boards of Public Improvements. These bodies are now empowered to initiate proceedings for many important purposes. When the expense to be incurred in pursuance of a resolution providing for the flagging or reflagging of sidewalks, laying or relaying of crosswalks, fencing vacant lots, digging down lots or filling in sunken lots shall not exceed \$2,000, the approval of the Board of Estimate and Apportionment is not necessary. In such cases the local

boards, subject to the approval of the Borough President, have final power.

Under the provisions of the Charter, the Secretary to the President is also the Secretary to the local boards. The work devolved upon him has grown to such proportions that he requires for its performance the services of three clerks and three stenographers, as well as the constant co-operation of the Supervisor of Complaints. The importance of these duties can be realized from the fact that the average number of visitors who during the past year called at this office on public business was about sixty a day.

The local boards constitute a forum in which citizens and property-owners are given a full opportunity to express their views in relation to proposed public improvements. The attendance has been so great that it has been found necessary to make arrangements to provide a larger room. As many as 600 persons have been present at several of these meetings. The people have realized the fact that improvements are now initiated in the Borough Hall and not at the headquarters of a political organization.

The various local boards acted in all cases for the benefit of the community in general. This is amply proved by the fact that most of the improvements initiated or authorized were for the benefit of the outlying districts of this borough, where they were obviously most needed. The following table gives the number of such improvements acted upon by the various local boards during the past year :

Public Improvements.

DISTRICTS.	SEWERS.	SURFACE.
Prospect Heights.....	7	107
Bedford.....	.....	31
Heights.....	2	9
Red Hook.....	9	25

DISTRICTS.	SEWERS.	SURFACE.
Bushwick	41	431
Williamsburg.....	10	60
Bay Ridge.....	205	295
Flatbush.....	60	320
Total.....	334	1,278
Grand total	1,612	

The attention paid to the requirements of the Bay Ridge district, as shown in the above list, proves that the present administration has encouraged improvements in a section which has been neglected for many years.

The sewer and surface improvement initiated by the several local boards of Bushwick, Flatbush and Prospect Heights have been of so useful a character that their beneficial results are already apparent in the increase of population, real estate values and general prosperity in those districts.

Important public improvements, which were for many years demanded by property-owners and the public in general, were acted upon by the local boards during the past year.

It is proposed in future to assess real property at its full valuation. This will, I am convinced, confer a double benefit upon the people of this borough. It will enable the Board of Estimate and Apportionment, without transgressing the constitutional limit of bonded indebtedness or adding to the burdens of the city taxpayers, to make appropriations for important public improvements, and will bring within reach an era of unexampled growth and prosperity in this borough.

Section 947 of the amended Greater New York Charter provides that the assessors shall in no case, for the purpose of meeting the cost of any specific public improvement, assess any house or lot, improved or unimproved land, more than one-half the full value of such house, lot, improved or unimproved lands. This provision has frequently made it impossible to effect much-

needed improvements for which property-owners were willing to pay, but which would cost more than fifty per cent. of the valuation. It will be possible in many cases to effect such public improvements if the proposed plan of full valuation is adopted. During the last year the Secretary of the local boards established a very successful system in connection with the work of these bodies. At his request inspectors employed in the Bureau of Highways were assigned to this office, under the jurisdiction of the Supervisor of Complaints, for the purpose of investigating the merits of all petitions for flagging and fencing. They were instructed to call, in every case, upon the property-owners and urge them to effect the required improvements themselves. The results of this new policy have been very satisfactory. Many miles of flagging have been laid voluntarily and in one-third the time that would have been required if the work had been done by The City of New York.

LOCAL SCHOOL BOARDS.

Under the provisions of section 1087 of the amended Greater New York Charter, The City of New York was divided into forty-six local school board districts, of which fourteen lie wholly in the Borough of Brooklyn; and it became my duty, as President of this borough, to appoint five members of each local school board for terms of one, two, three, four and five years. I gave this matter my most earnest attention, because I believe that the Department of Education, which disciplines and moulds the minds of children, is the most important of all public instrumentalities. I selected for these positions representative men and women whom I knew to be familiar with and interested in the educational needs of Brooklyn, and on whom I could depend to perform with zeal and efficiency the duties which would devolve upon them. I appointed two women as members of every local school board. I did so because I believe that the supervision of educational work is a proper sphere for the exercise of a cultured woman's abilities.

Mothers who possess strength of intellect should be assigned some part in the control of the institutions in which children receive their mental training. I have always recognized the value of their co-operation in religious, moral and charitable work. I have not been disappointed in my expectations. They have brought to the performance of their duties in the inspection of schools, the investigation of complaints, etc., the highest degree of earnestness and wisdom.

The law relating to the school system of this City should, in my opinion, be amended. The centralization of government was tested during the four years preceding January 1, 1902, and proved to be unsatisfactory in almost every particular. The interests of Queens, of Brooklyn and Richmond were not adequately protected. The amendments to the Charter which conferred upon each borough the right of partial self-government have been eminently successful in their operation. It is regrettable, therefore, in my opinion, that the same principle of decentralization was not applied by the Legislature to the Department of Education, because it is obvious that the difficulties and defects of administration increase in direct proportion to the enlargement of the sphere of supervision.

Under the provisions of section 1088 of the amended Charter, the local school boards have been intrusted only with the power of recommendation. What was given with one hand was taken away with the other. All actual authority is vested in the Board of Education or the Board of Superintendents.

I trust that the success that has attended the experiment of decentralizing other branches of the City Government will induce the Legislature either to enlarge the powers of the local school boards or to adopt such further amendments to the Charter as will create borough centres of school administration.

INTERBOROUGH TRANSPORTATION.

The development of Brooklyn has been retarded, up to the present time, by the lack of proper rapid transit facilities. The difficulties and actual dangers attendant upon the journey to and from Manhattan have forced thousands of families to make their homes in the northern districts of New York County, in Westchester, New Jersey, and along the shores of the Hudson. The counties of Kings, Queens and Richmond have suffered in varying degrees from their practical isolation. Brooklyn has grown, but in spite of its disabilities. When it is connected with Manhattan by an adequate system of bridges and tunnels it will be, in the course of a few years, the chief residential part of Greater New York. I have no doubt that, in less than twenty-five years, a brief space in a city's history, the population of this borough will have overtaken and passed that of Manhattan.

This result will be directly due to consolidation. The interests of the former cities of Brooklyn and New York were not identical. It is not probable that bridges and tunnels would have been constructed, at least on a large enough scale, to unite two distinct municipalities. At best this would have been effected only by mandatory legislation. Now, on the other hand, the necessity of unifying The City of New York, in fact as well as in theory, has been recognized by all its citizens; and this cannot be done, in my opinion, except by the establishment of a system of interborough railroads.

The need of increased rapid transit facilities, as far as this borough is concerned, can be seen every morning and evening during the "rush" hours, when the entrances to the Brooklyn Bridge and the ferries are one mass of struggling humanity, in which men, to their discredit, are not respecters of women or children. I express the satisfaction of Brooklyn citizens when I say that the new bridges and tunnels, when completed and in operation, will do away with the brutal and unendurable conditions that now prevail at all points of transportation.

I am glad to learn that Bridge No. 2, commonly known as the Williamsburg Bridge, extending from Delancey street, Manhattan, to a point near Broadway, Brooklyn, will be opened in the latter part of this year or the beginning of next. This will partially relieve the congestion which now exists in the traffic between those boroughs. I have been informed by Commissioner Lindenthal that the construction of Bridge No. 3 will be expedited as much as possible, and I trust that the East river will soon be spanned by another bridge, crossing Blackwell's Island to Long Island City, because the interests of Kings and Queens counties are very closely allied.

Before the tunnel contract was awarded to the Rapid Transit Subway Construction Company I examined the plans and specifications and found that they provided for the construction of only two tracks (one each way) between the City Hall, Manhattan, and the Borough Hall, Brooklyn. In a letter addressed to the Board of Rapid Transit Railroad Commissioners and dated February 20, 1902 (Appendix 2), I submitted to that body my conviction, and, I believe, the wishes of my constituents, that there should be four continuous tracks along the whole length of the subway. I believed that this was necessary for three reasons:

(1) I was convinced that one track each way would furnish only a maximum transportation of 23,000 passengers per hour, whereas it has been calculated that during the "rush" hours at least 1,000 passengers a minute cross the Brooklyn Bridge. Taking into consideration the average yearly increase of Brooklyn's population, the conditions of traffic, when the proposed tunnel is completed, would be practically the same as they are at present.

(2) Brooklyn trains would be required to use the tracks of the Manhattan Rapid Transit Subway from the City Hall terminal to a point between Pine street and Exchange place, and there be switched, with more or less danger of an accident, into two separate tunnels running on a down grade under the tracks leading to the Battery loop. Transportation to and

from Brooklyn would, therefore, be necessarily retarded in direct proportion to the running time of Manhattan trains.

(3) If four tracks were constructed, a free track each way would always be available, as there is only a very slight possibility that a block would take place, at the same time, in the two tracks operated in the same direction, and the danger of a disaster would be proportionately lessened.

My objections were, I regret to say, overruled; but they were followed, nevertheless, by good results. It was thought that the construction of the proposed tunnel would cost about \$8,000,000, and it was informally agreed that such an amount should be reserved in the City treasury, so that at any time it might be appropriated by the Board of Estimate and Apportionment for rapid transit purposes without encroaching upon the limit of bonded indebtedness. The contract was awarded to the Rapid Transit Subway Construction Company at the unexpectedly small cost of \$3,000,000—\$2,000,000 for construction and \$1,000,000 for real estate, terminals, etc. These favorable terms enabled the Board of Rapid Transit Railroad Commissioners to instruct their Chief Engineer to prepare plans for the construction of additional subways, in order to solve the Brooklyn transportation problem.

As I believed I was acquainted with the needs of Brooklyn in the matter of rapid transit, I sent a communication to the Board of Rapid Transit Railroad Commissioners (Appendix 3), in which I suggested the following routes for subway extensions in this borough:

(1) The construction of a subway from the Brooklyn entrance to Bridge No. 3 at De Kalb avenue and Fulton street to connect with the proposed terminal of Tunnel No. 1, at the junction of Flatbush and Atlantic avenues, and thence to branch out in two directions, one through Flatbush avenue to a point near the intersection of Malbone street, to provide a connection with the Brighton Beach Extension of the Kings County Railroad; the other under the whole length of Fourth avenue, to a point on the Shore road, north of the United

States Government Reservation, and thence to pass under the Narrows to the County of Richmond.

(2) The construction of a subway from the Battery, Manhattan, to the foot of Hamilton avenue, in this borough, to be continued under Hamilton avenue and connect with the Fourth avenue tunnel.

The adoption of the suggested plans would, in my opinion, furnish a satisfactory system of rapid transit, not only to the residents of a neglected and undeveloped district south of Atlantic avenue, but also to the people of Richmond. From the moment that trains can run from Tottenville to Tremont, the prosperity of Staten Island will be assured. Like Brooklyn, it has great possibilities of development in districts which are now practically unoccupied. I trust that these routes will be approved, at least in their general outline, by the Board of Rapid Transit Railroad Commissioners, so that Brooklyn and Staten Island may at last obtain adequate relief from conditions under which they have long suffered.

A map showing the routes I have submitted to the consideration of the Board of Rapid Transit Railroad Commissioners is hereto annexed.

SCARCITY OF COAL.

The results of the Pennsylvania coal strike were severely felt in this borough. The situation was so serious that I felt it to be my duty to deal unofficially with that difficult problem. The poor were the chief sufferers. The price of coal had risen to an abnormal height, which was maintained even after the return of the miners to work. I invited the leading coal dealers of Brooklyn to a conference which was held in the Borough Hall and entered into personal communication with the presidents of the various coal roads. I represented to them the fact that the winter was close at hand and that it was absolutely necessary to make some arrangements by which the poor could secure coal at a price not exceeding 10 cents per pile.

I am glad to be able to state that I received the cordial co-operation both of the railroad presidents and of the coal dealers in this borough; and I take this opportunity to acknowledge with gratitude, in the name of the people of Brooklyn, the public spirit which they manifested in that trying crisis.

All of which is respectfully submitted.

J. EDW. SWANSTROM,
President, Borough of Brooklyn.

APPENDIX I.

JULY 21, 1902.

Board of Rapid Transit Commissioners,

No. 320 Broadway, New York City:

DEAR SIRs—I am credibly informed that the Brooklyn Heights Railroad Company, or the Brooklyn Rapid Transit Company, or a company organized and controlled by them, will be among the bidders to-day for the proposed Manhattan-Brooklyn Tunnel, which will be constructed from Flatbush and Atlantic avenues, in this borough, and pass under the East River to the Borough of Manhattan.

I feel it my duty to submit to your Honorable Board the following considerations, which will, I believe, convince you that it is neither right nor proper that additional public franchises should be granted to this corporation, at least until such a time as it has discharged its statutory obligations to The City of New York.

Article 4, section 98, of the General Railroad Law provides that "Every street surface railroad corporation, as long as it shall continue to use any of its tracks in any street, avenue or public place in any city or village, shall have and keep in permanent repair that portion of such avenue, street or public place, between its tracks, the rails of its tracks and two feet in width outside of its tracks, under the supervision of the proper local authorities, and whenever required by them to do so and in such a manner as they may prescribe. In case of the neglect of any corporation to make pavements or repairs after the expiration of thirty days' notice to do so, the local authorities may make the same at the expense of said corporation."

The obligation thus imposed by statute is sustained by the opinion of the Court of Appeals in the case of *Conway vs. The City of Rochester*, 157 N. Y., 33-41. In this case, which was

decided in October, 1898, the learned Justice held that section 98 of the present Railroad Law "does make it the duty of railroad companies to keep that portion of the street described in the statute in permanent repair, and does command that it shall make such repairs, not only whenever required by the local authorities, but also in such a manner as they prescribe." The language employed by the Legislature is broad enough to include repavement as well as repairs, and that it was thus used advisedly is further evidenced by the very next sentence, which provides that "In case of the neglect of any corporation to make pavements or repairs, the local authorities may make the same at the expense of such corporation."

This law provides that a street surface railroad shall keep in repair the portion of the roadway which lies between the tracks and the rails of the tracks and two feet outside the tracks.

This statute has been persistently ignored by the Brooklyn Heights Railroad Company. It has allowed the pavements upon many miles of our streets to lapse into a condition which is absolutely dangerous to pedestrians, horses and vehicles. It has refused or neglected to obey the direct and explicit instructions of the borough authorities, who have duly and in accordance with law called upon it to keep said portions of the streets used by it in permanent repair.

On April 4, 1902, after a careful investigation of all the thoroughfares in this borough used by this railroad corporation, a written notice was served upon the Brooklyn Heights Railroad Company, calling on it to repair the pavements of eighty-eight different streets. In this communication the points were specified at which the repairs were most urgently needed. No attention was paid to this notice until May 13, upon which date the said Brooklyn Heights Railroad Company notified this Department that a paving gang had been instructed to proceed with the work on seventy-five of the eighty-eight streets mentioned.

I am able to state, however, upon information and belief, that on that very day, May 13, 1902, the Brooklyn Heights Railroad Company withdrew their paving gangs from work. No attempt was made until the end of June to initiate this much needed improvement of the streets. At the present time there are three inadequate paving gangs at work, a force which is entirely insufficient to make the necessary repairs this year.

To be specific, let me say that on March 3, 1902, this corporation was notified to have and keep in permanent repair, with granite block pavement, on concrete base, with tar and gravel joints, the pavement of Flatbush avenue, between their tracks and the rails of their tracks, from Malbone street to Fort Hamilton avenue. On June 27, 1902, they replied that no obligation rested upon the company to incur the expense of such repaving.

On April 2, 1902, they were ordered to have and keep in permanent repair, with granite block pavement, on concrete base, with tar and gravel joints, the pavement of Union street, between Fourth avenue and Court street. On June 27, 1902, they informed this Department that they would accede to the request. They began to lay this pavement on sand and were stopped. After a conference the company was permitted to repave on sand between Court street and the Gowanus Canal, and the rest on concrete. Of this work nothing has been done.

In the autumn of last year the Brooklyn Heights Railroad Company was instructed, in contemplation of the proposed paving with asphalt of Third avenue, from Sixtieth street to the Shore road, to repave the space between their tracks and between the rails of their tracks. They have neglected or refused to obey these instructions.

In the letter of June 27, 1902, above alluded to, this corporation agreed to do certain work imposed upon it by law, but declined to perform such work on the most important streets of this borough, such as Gates avenue, Third avenue, Nostrand avenue and Flatbush avenue.

In an interview held between myself and the Commissioner of Public Works, representing The City of New York, and the President and Secretary of the Brooklyn Heights Railroad Company, representing that corporation, I informed them orally that the pavement of Flatbush avenue, between Fort Hamilton avenue and Church avenue, was in a very dangerous condition, and that in order to secure the safety of pedestrians and horses it should be repaired at once. This they have failed to do. Neither the oral nor the written agreement of the said corporation can be trusted. On March 22, 1899, they agreed, through their engineer, to remove the tracks on Humboldt street, together with the poles and overhead wires, and to restore the street to its former condition, provided that they were permitted to make a connection on Meeker avenue, between Humboldt street and Graham avenue. On October 23, 1899, a similar stipulation was executed by the President of the said company and transmitted to the former Commissioner of Highways. On August 2, 1900, they were granted a permit to make the said connection on Meeker avenue, on condition that the company would remove the double tracks, overhead wires and poles therefrom and restore the street to its former condition. A certificate was attached to this permit in which the said Brooklyn Heights Railroad Company, "pursuant to a resolution of its Board of Directors, hereby certifies and declares that it accepts said permit, with all its terms, conditions and provisions, and agrees to all the terms, conditions and provisions of said permit." This agreement was executed on August 7, 1900, by the President and Secretary of the company, and thereafter a permit was granted by The City of New York for the construction of the aforesaid connection on Meeker avenue. At the end of the year 1901, the said company had done absolutely nothing in the matter of removing the tracks, overhead wires and poles, nor had it made, according to the written communication of the Secretary of the Railroad Commissioners, any application to the said Commissioners for the removal of said tracks, wires and poles. They

were, therefore, notified by this Department, on February 11, 1902, to make application, in pursuance of their agreement, to the Railroad Commissioners for permission to remove the tracks, wires and poles above mentioned, and within a reasonable time after the consent of the Railroad Commissioners was obtained, to remove the said tracks, wires and poles and to restore the street to its former condition. They have not, I am informed and believe, applied to the Railroad Commissioners for such permission, nor did they remove the said tracks, wires or poles. Finding that the company deliberately intended to violate its written agreement with the City, I ordered the Bureau of Highways to remove the said tracks. My instructions were carried out.

I respectfully submit to your Honorable Board, therefore, that the written agreement of the Brooklyn Heights Railroad Company is absolutely worthless, except so far as it may be to their interest to carry it out.

On April 17, 1902, the Brooklyn Heights Railroad Company was notified that, by reason of the maintenance of the railroad cuts through the south line of Thirty-eighth street, between Fourth and Fifth avenues, and the absence of a retaining-wall upon the side of said cut, the said Thirty-eighth street, between the points mentioned, had fallen into the excavation. They were requested to restore the said street at once to its former condition, so that it would be fit and safe for public use, and to construct an upper retaining-wall for the purpose of safeguarding the said street. On April 22, 1902, they stated in reply to this demand that the property in question belonged to the South Brooklyn Railroad Company, but that their engineer, acting on behalf of the South Brooklyn Railroad Company, was preparing a plan for the purpose of furnishing a permanent support to this street, and that as soon as the plans and estimates were completed they would confer with this Department. They have assumed a policy of absolute inactivity in this matter for now three months and the street still remains in a condition which menaces the lives and property of our citizens.

It is clear, therefore, that the Brooklyn Heights Railroad Company ignores the wishes of the public authorities and is indifferent to the safety of our citizens who use the streets.

I further respectfully submit to your Honorable Board the fact that the Brooklyn Heights Railroad Company is financially indebted to The City of New York. The former Department of Highways advanced the funds of the City to effect certain repaving, which, under the provisions of the said General Railroad Law, devolved as a duty upon the said company, but which the said railroad company neglected or refused to do.

I have instructed the Law Department to institute legal proceedings against the said company on behalf of The City of New York. The indebtedness of the Brooklyn Heights Railroad Company for money expended by the former Department of Highways in the performance of work which was chargeable upon the company itself has accumulated in the present Bureau of Highways to the extent of over \$10,000.

In conclusion, I consider it my duty to point out to your Honorable Board the fact that a street surface railroad company which has been thus negligent in the performance of its duties to the public authorities and of the safety of pedestrians, should not be granted further public franchises until at least their financial arrears have been liquidated and a proper bond has been given for the performance of the stipulations which may be made between them and The City of New York.

We do not receive the bids of private contractors who are in arrears or from those whose character and record prove them to be untrustworthy, and I cannot understand why a street railroad corporation should be dealt with on any other basis.

I inclose herewith copies of the letters referred to in this communication.

Yours very truly,

(Signed) J. EDW. SWANSTROM,

President, Borough of Brooklyn.

APPENDIX 2.

FEBRUARY 20, 1902.

To the Board of Rapid Transit Commissioners,

346 Broadway, Borough of Manhattan :

DEAR SIRs—Permit me to submit to your Honorable Board what I conceive to be the wishes of the people of Brooklyn in relation to the proposed Manhattan-Brooklyn Rapid Transit Extension.

The only plans which, in my judgment, will be approved by the people of this borough must provide for the construction of four continuous tracks connecting the City Hall loop in Manhattan with the Borough Hall in Brooklyn. I am informed that the Court has given its sanction to the plans lately submitted by your Honorable Board. These provide for the construction, south of the City Hall, of a two-track continuation of the four-track subway lying north of the City Hall. This proposed extension will run southward, on practically the same level, and form a loop at the Battery for return trains. It is intended, although it will be confined to two tracks only, to be an integral part of the Manhattan Rapid Transit system and to furnish transportation from the districts above the City Hall to the lower end of Manhattan Island and return.

Your plans further provide that Brooklyn trains will be obliged to use the same two tracks until a point is reached between Pine street and Exchange place, where a switching system is to be introduced, by means of which trains from the City Hall terminal to Brooklyn will run on a down grade under the tracks leading to the Battery loop and pass into two tunnels driven under the East river.

I believe, for many reasons, which I shall deal with later, that the proposed plans do not satisfy all existing conditions. If carried into effect they will not eliminate the congestion which is now a feature of the Brooklyn Bridge during the "rush" hours; because at such times one tunnel will not have a sufficient carrying capacity. Nor will they contribute to the safety of the traveling public, because, in the first place, human care and vigilance are not so infallible as to prevent the occurrence of accidents on a railroad controlled by switches at a point where the traffic at certain hours of the day is necessarily heavy. Further than this, the construction of only two tunnels under the East river, one for eastbound and the other for westbound trains, will not only fail to relieve the unsatisfactory conditions of traffic which exist at present, but will give us no guarantee of safety. The terrible possibilities of an accident, resulting from a block in a tunnel, are not sufficiently guarded against in the plans adopted by your Honorable Board.

I understand that you are authorized by statute to present such modifications of the plans as you may deem advisable, and that such amendments will not invalidate the approval already given by the Court.

As the official representative of the Borough of Brooklyn, therefore, I most respectfully request your Honorable Board to propose and procure to be adopted such amendments as shall establish four continuous tracks along the entire route from the City Hall, Manhattan, to the Borough Hall in Brooklyn.

The present and future conditions of Brooklyn demand the following changes in the proposed plans:

I.—That there shall be four continuous tracks between the City Hall terminal loop in Manhattan and the Borough Hall in Brooklyn.

Whatever may be the commercial future of the Borough of Brooklyn, no one can doubt that it will become the chief residential portion of Greater New York. Its great stretch of territory fits it to fulfill that manifest destiny. It will be enabled by Rapid Transit to solve the tenement-house problem and

make it possible for the workingman to live far from his work. Here a large majority of New York's wage earners will ultimately make their homes. In this respect the population of Brooklyn will increase more rapidly than that of any other borough. It has already begun to do so, in spite of the short-sighted discrimination shown against a borough which surrendered its independence as a city in consideration of promises as yet unfulfilled. It has grown with such rapidity that all its transit facilities are overtaxed; and interborough communication, during certain hours of the morning and evening, is attended not only by discomfort but with positive danger. It is to me unaccountable, therefore, that your engineer, who is intrusted with the responsible task of devising a great rapid transit system, should testify that the number of passengers, who, during the afternoon "rush" hours, would use the proposed extension, for the purpose of reaching their homes in the upper parts of Manhattan or The Bronx, is from two to five times greater than the number of persons who would use it to go to Brooklyn. To any one who has seen the continuous crowds surging upon the Bridge and ferries to Brooklyn, the statement appears preposterous. It seems to be at variance with the fact, which repeatedly appears in the evidence before you, that, during the "rush" hours, 1,000 passengers a minute cross the Brooklyn Bridge, and that immense crowds use the various ferries between Manhattan and Brooklyn. It is difficult to reconcile this statement with other testimony given by your engineer to the effect that the total number of northbound passengers taking the elevated trains below the City Hall does not exceed 25,000,000 per annum; and that, to use his own words, "a similar state of affairs" exists on the surface lines. At most, therefore, the total number of passengers carried on all the railroads in Manhattan, from points below the City Hall, amounts to fifty millions per annum, whereas it was proved before you that at least one hundred million persons cross the Brooklyn Bridge every year. When to this is added the large volume

of traffic over the Brooklyn ferries it will be seen that there must be an error somewhere in the calculation of your engineer. In view of these facts the necessity for the establishment of a rapid transit system, which will be adequate to meet the increasing demands of Brooklyn, is apparent.

In spite of the discouraging if not disgraceful lack of proper transit facilities connecting this borough with Manhattan, the population of Brooklyn has increased during the last few years and is still increasing at a remarkable ratio. This fact would seem to prove that as soon as the Manhattan-Brooklyn Rapid Transit Extension is completed and in operation, the maximum service that can be obtained will be required to meet the increased demands for transportation. Any less adequate provision, whether in Manhattan or Brooklyn, will have been so discounted by the natural increase of population as to perpetuate the conditions that have now become a disgrace to the city at large.

I think it is evident that, if the proposed extension consists of only two separate tunnels with a single track in each, it will be impossible to clear the way, when the necessity arises for so doing, unless there are ample storage spaces in Manhattan, south of the City Hall, and these are practically unattainable.

If four tunnels are constructed, there is only an infinitesimal possibility that a block could occur at the same time in the two tunnels operated in the same direction, so that a free track each way would be always available in case of emergency; and, with ordinary switching facilities at the Brooklyn and Manhattan terminals, the trains backed from the blocked tunnel could at once be used for the transportation of passengers.

Your engineer on the stand testified that trains consisting of eight cars each, having a seating capacity for forty-eight passengers, could be dispatched through the proposed tunnel at a minute's headway. Such a service, either in the case of long tunnels with heavy grades or land sections marked by such frequent stops as are contemplated along the route, would probably reach the limit of safety. Yet, even if such a service

was feasible, transportation would be furnished over one track to only 23,000 passengers per hour, providing every seat was occupied.

It seems to me, therefore, conclusive that in dealing with one and one-half mile tunnels, especially when the grades are high, as will be the case in those proposed under the present plans, it is not safe to count upon handling trains crowded during the "rush" hours to the "stand up" limit, at a headway reduced to the minimum specified by your engineer. Apart altogether from the fact that the Borough of Brooklyn has a magnificent future, considerations of safety demand that four continuous tracks should be provided from the first.

The recent disaster in the tunnel operated by the New York Central Railroad Company constitutes a terrible warning as to the fatal results which spring from an unwise economy. If the present plans of the Manhattan-Brooklyn Rapid Transit Extension are not amended, there will always be the danger of an appalling catastrophe. This possibility can be properly reduced only by the establishment of a continuous four-track system. All these considerations seem to me to be conclusive arguments in favor of the construction of a four-track system of underground rapid transit from the City Hall, Manhattan, to the Borough Hall, in Brooklyn. In order to accomplish this result, your engineers are confronted by no abnormal difficulties. Their science can achieve in the lower part of Manhattan and Brooklyn what has been accomplished elsewhere. But there is one plausible reason why your Honorable Board may be influenced to reject the demand which I now have the honor of making. It is possible that we have almost reached the constitutional limit of bonded indebtedness. If the margin now remaining is too small to warrant an additional expenditure which will make the construction of a four-track system possible, we must submit to the inevitable. But I cannot believe that we have approached so closely to the verge of financial danger. I am convinced that The City of New York can afford to appropriate such a sum of money as will enable your Board

to satisfy fully, in the matter of rapid transit, the growing requirements of a great territory which will in the future contain the largest population of any of the five boroughs which now constitute Greater New York.

II.—That, in any event, four continuous tracks should be constructed from the City Hall, Manhattan, to the Battery.

If it be determined that a continuous four-track system cannot now be constructed from the City Hall, Manhattan, to Brooklyn, because of the necessity of avoiding an encroachment upon the limit of bonded indebtedness, then I most earnestly request your Honorable Board to adopt such amendments as will at least provide for the construction of four tracks south of the City Hall in Manhattan.

As already stated, the plans which have been adopted provide for the construction of two tracks (one each way) south of the City Hall terminal. This means that there will be only one track for trains running from Manhattan to Brooklyn. Upon this single line it is proposed, according to the present plans, to operate not only the Brooklyn trains, but also the Manhattan trains which are intended to go around the loop at the Battery. It is obvious that this double use of a single track will be an obstruction to all trains and reduce, even below the capacity of a single track, the service to Brooklyn during the "rush" hours.

It will also make necessary the use of switches, and this system will not only entail intolerable delays, but render the service unsafe and dangerous during the periods of maximum travel.

With both classes of passengers using the stations below the City Hall it is not difficult to imagine the underground pandemonium of crush, danger and delay that will ensue.

Apart from the considerations of safety, economy and efficiency, there is an element of unfairness to Brooklyn in the proposed plans which it is difficult to ignore. Manhattan has been provided with a magnificent four-track subway for practically the whole length of Manhattan Borough, and for its

exclusive use, while Brooklyn, in that respect, is regarded as a negligible factor of such slight importance that a single track each way is considered sufficient for its needs; and, in addition to this, the service of trains to Brooklyn along this single track will be lessened and impaired not only by the fact that the same track, for part of the route, will be used by the Manhattan trains which travel around the Battery loop, but also by a complicated switching system made necessary by the proposed plans. To condemn this borough to such inadequate service as that proposed by the plans adopted by your Honorable Board is, in my judgment, a grave mistake and an act of great injustice.

I desire to remind you that the bonds issued by The City of New York for the purpose of raising the amount of money necessary to construct the underground rapid transit railroads in the Borough of Manhattan rest as an obligation not upon one, but upon all the boroughs constituting Greater New York. This fact alone indicates that your Board will have exercised an unjust discrimination in favor of the Borough of Manhattan, if the final plans of the Manhattan-Brooklyn Rapid Transit Extension will only provide for the construction of a two-track subway joining the City Hall, Manhattan, and the Borough Hall, Brooklyn.

By the addition now of two tracks to the two already projected between the City Hall terminal and the proposed switches in lower Manhattan, it will be possible for trains to run to and from Brooklyn without obstruction and the danger which such obstruction necessarily entails; and, at some future time, a continuous four-track system can be economically provided from that point in lower Manhattan to the Brooklyn Borough Hall.

I trust that, for the sake of the city at large, and particularly for the welfare of Brooklyn, there will be no repetition of the mistakes of the past. When your rapid transit work is completed it will be a relative failure unless it will supply transportation without overcrowding or danger. The exigent

nature of the demand makes it clear that this is no time to be economical at the expense of the people, even though economy is the motive that underlies the adoption of your present plans. It will cost, on one estimate, an additional expenditure of \$250,000, on a more liberal estimate \$500,000, to substitute a four-track system of rapid transit from the City Hall terminal to the Battery. If the addition of two tracks from the City Hall to the Battery be left to the future (and if they are necessary now it will be doubly imperative to construct them at that time) the change will entail an outlay of \$2,000,000. Economy and wisdom, therefore, dictate that this four-track system, on that part of the route, at least, be installed at once.

This will be a working compromise and will enable you in the future, when the finances of the City will warrant the additional expenditure, to authorize the construction of two additional tunnels under the East river and the enlargement of the subway in the Borough of Brooklyn.

Yours respectfully,

(Signed) J. EDW. SWANSTROM,

President, Borough of Brooklyn.

APPENDIX 3.

SEPTEMBER 25, 1902.

Board of Rapid Transit Railroad Commissioners:

320 Broadway, New York City:

GENTLEMEN—A preamble and resolution were adopted by your Board at a meeting held July 24, 1902, in which you directed your Chief Engineer to prepare and submit to you for your consideration and action, routes and a general plan for an additional tunnel which would connect, as directly as practicable, the general region of the City Hall, Manhattan, with the general region of Borough Hall Park, or some other equally convenient transportation centre in the Borough of Brooklyn.

I believe I express the feeling of my fellow citizens in this borough when I say that they indorse unreservedly that excellent project which the favorable terms offered by the Rapid Transit Subway Construction Company for the Manhattan-Brooklyn tunnel enabled your Board to bring within the sphere of realization. The work already contracted for will, to a certain extent, solve the problem of interborough transportation, but it is obviously only an initial step in that direction.

The construction of an additional tunnel from Manhattan to some point (not yet selected) in Brooklyn is imperatively demanded, not only by the needs of this borough, but by the fact that tunnel No. 1, already contracted for, will have but a single track each way, which obviously is not adequate to provide for even the present demands of transit facilities between the two boroughs. Tunnel No. 1, when completed, will relieve only partially the congestion which now exists during the rush hours. I believe that in order to provide adequately for all sec-

tions of this borough the second subway should be constructed from the southern end of Manhattan to the neighborhood of Hamilton ferry, Brooklyn. I shall dwell more fully in another part of this communication upon my reason for making this suggestion.

The subway which will run from a point in Manhattan to the junction of Flatbush and Atlantic avenues will furnish rapid transit facilities to the residents of only a limited area. It will fail to open up a district which constitutes about three-fourths of this borough, bounded by Atlantic avenue on the north, Jamaica Bay on the east, the Atlantic ocean on the south and the Lower Bay and Narrows on the west. This is a territory which is, perhaps, the most beautiful and healthful within the limits of The City of New York and which is large enough to furnish homes to a population three times as large as that of Manhattan. The problem of rapid transit, as far as Brooklyn is concerned, cannot be finally solved until the residents of that district can be conveyed to the business sections of Manhattan with a minimum of delay and a maximum of comfort. The population and real estate values of this great and relatively undeveloped part of Brooklyn will increase by leaps and bounds from the moment it is furnished with adequate rapid transit facilities.

It should be possible to make the entire trip to Manhattan for a five-cent fare. The difference between the enforced expenditure of twenty cents per day and ten cents for car fare is a matter of no mean importance to many persons who live in Brooklyn and work in Manhattan. In order to secure this desirable result and thus benefit thousands of Brooklyn people whose earning capabilities are only moderate it will be necessary to make extensive rapid transit connections in this borough by means of which the traveling public can, while saving time, obtain as cheap transportation as is now furnished by the trolley lines in Brooklyn.

This is demanded not only by the insistence of the intolerable conditions which now exist in Brooklyn, but also by the

fact that, in the future, this borough is likely to be the chief residential district of The City of New York.

The construction of the Manhattan-Brooklyn tunnel is a step in the right direction and was imperatively demanded by a long-suffering Brooklyn public.

But in order to remedy the evils from which they have suffered your Honorable Board should, in my opinion, authorize the construction of a subway from the approach to Bridge No. 3, at De Kalb avenue and Fulton street, to connect with the proposed terminal at the junction of Flatbush and Atlantic avenues; and thence to branch out in two directions, one through Flatbush avenue and the other through Fourth avenue. The Flatbush avenue branch should run under Flatbush avenue to a point near the intersection of Malbone street and thus provide a connection with the Brighton Beach extension of the Kings County Railroad. In this way the quickest possible transportation will be furnished to and from the very heart of the district I have described and the disabilities under which the residents on each side of the Brighton Beach Railroad have labored for many years and for which they have vainly sought a remedy will be removed.

The other branch, the importance and feasibility of which will, I believe, be patent to your Honorable Board, should be constructed from the proposed terminal at Flatbush and Atlantic avenues, under the whole length of Fourth avenue, to a point on the Shore road north of the United States Government Reservation, and thence pass under the Narrows to the County of Richmond. The selection of this route is demanded both by the needs of Brooklyn and Staten Island, and is recommended by its adaptability to the purposes I have mentioned. In the first place, the construction of a tunnel under Fourth avenue is practically free from engineering difficulties, because the roadway is unusually wide, and in addition to that it is without railroad tracks. Furthermore, it terminates at the narrowest point of the Narrows, so that a subway connecting the boroughs of Brooklyn and Richmond, and thus uniting

the five boroughs with lines of steel, could be constructed at a minimum of expense. Such a tunnel would be of incalculable value to this borough. It would develop a magnificent region, the growth of which has been comparatively insignificant, and enable the residents of Fort Hamilton, Bay Ridge and the surrounding territory to reach Manhattan without being subjected to vexatious delays. They will be further benefited in this respect if you will authorize the construction of tunnel No. 2 from the Battery, Manhattan, to Hamilton ferry, in this borough, and not to the general region of Borough Hall Park. This subway should be continued from that point along and under Hamilton avenue until it connects with the Fourth avenue tunnel. Passengers will thus be enabled to reach the business sections of Manhattan by three different routes, by either tunnel No. 1 or No. 2 or bridge No. 3.

While the adoption of this plan by your Honorable Board will result in an unprecedented development of the great district south of Atlantic avenue, in this borough, it will be of still greater benefit to Staten Island. For many years the residents and property owners of Richmond County have tried to devise some practicable plan, the adoption of which would furnish them with direct railroad communication with the old City of New York and present Borough of Manhattan. They have been and are to-day practically isolated from the other boroughs. Like Brooklyn, they have a magnificent territory and splendid possibilities of development. All that is lacking in either case is an adequate transportation system.

An opportunity is now presented to your Honorable Board to bring the County of Richmond into closer touch with the rest of the city and to enable its people to reach by railroad not only their places of business, but also the shopping centres of Brooklyn and Manhattan. I respectfully, therefore, request you, on behalf of the Borough of Brooklyn, to authorize the construction of subways along the routes I have specified and thus contribute to the development of two boroughs, whose future, to a very large extent, depends upon the creation of

such rapid transit facilities as will unite them absolutely with the rest of the city. If this be done I firmly believe that it will not be many years before the population of New York City will equal, if not exceed, the present population of London.

I send herewith a plan showing the routes of the proposed subways.

Respectfully yours,

(Signed) J. EDW. SWANSTROM,

President of the Borough of Brooklyn.

ANNUAL REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS

FOR THE

Year Ending December 31, 1902.

*Attached to which are the Annual Reports for the
same period of the—*

ASSISTANT COMMISSIONER OF PUBLIC WORKS,
BUREAU OF HIGHWAYS,
BUREAU OF SEWERS,
BUREAU OF PUBLIC BUILDINGS AND OFFICES,
BUREAU OF INCUMBRANCES AND PERMITS,
GENERAL BOOKKEEPER.



EIGHTH AVENUE SOUTH FROM A POINT BETWEEN THIRD AND FOURTH STREETS.

BROOKLYN, N. Y., January 1, 1903.

Hon. J. EDWARD SWANSTROM,
President, Borough of Brooklyn:

DEAR SIR—I have the honor to present the annual report for that portion of the work of your office which is under my care, as follows:

One year ago the department whose work is outlined below did not exist. To-day it is fully organized, with an executive and technical staff and mechanical plant second to none of its kind in any municipal service. Not only has it been created and organized, but the following report will show that it has made a new record in municipal activity. First of all, credit is due for the successful outcome of the year's work to the unfailing support received at your hands and to the generous appropriations by you secured from the financial authorities. Much also is due to the zealous work of the engineering and executive officers in the several Bureaus, many of whom have postponed or gone without vacations and have voluntarily worked overtime. The final result is not to be credited to any one man, but to the continuous and earnest labors of the several bureau heads, chief engineers and their associates under your leadership. My purpose and that of my associates has been to show by deeds that your leadership has been appreciated and supported. This, I venture to believe, is made clear below.

On January 1, 1902, by changes in the City Charter, the former Departments of Highways and Sewers, with a portion of the former Department of Public Buildings, Lighting and Supplies, were, with the Topographical Division theretofore an adjunct of the former Board of Public Improvements,

merged into one whole, under the care of the Borough President and were by you placed in my care in this borough. The present organization is in four bureaus, viz. :

Bureau of Highways, Mr. George W. Tillson, Chief Engineer.

Bureau of Sewers, Mr. John Thatcher, Superintendent; Mr. Henry R. Asserson, Chief Engineer.

Bureau of Public Buildings and Offices, Mr. Frank J. Helmle, Superintendent.

Bureau of Encumbrances and Permits, Hon. Otto Kempner, Assistant Commissioner of Public Works, Acting Superintendent.

To the above should be added the separate office of the Assistant Commissioner of Public Works, which has charge of all the contract work and the advertising and receiving of bids.

The office of the Bookkeeper for the Department, under the care of Mr. William Chambers.

The office of the Commissioner of Public Works.

The Topographical Division under the charge of Mr. George J. Bischof, Assistant Engineer, a portion of the Bureau of Highways.

Attached are the reports of each of the officers named which form a portion of this report.

By reason of the above changes all specifications and contract forms and nearly all the stationery and blanks theretofore used in the several departments and bureaus thus united became useless, and one of our first duties was the preparing of these necessary papers. Some of them required the approval of the Law Department and of the Board of Estimate and Apportionment and the record which follows should be judged with the fact in mind that for the first three months of the year we were not only without contract and specification forms, but also lacked for long such necessities as printed letterheads and envelopes. It is, therefore, with what is, I trust, pardonable pride, on behalf of those who have labored with me, that I place before you a record unequalled in the history of Brooklyn, showing in nearly every point a result greater than that of any

previous year and in many respects greater by from 10 to 50 per cent. than that of the four previous years combined. This volume of work done with the new organization has not only been done well, but at a cost much below that of the previous four years of the history of the greater city and in most respects lower than any Brooklyn records show. I affirm, without fear of successful contradiction, that the present administration of the borough has obtained full value for its outlay. I invite the closest scrutiny and comparison of the facts submitted; they will speak for themselves.

THE POLICY OF THE YEAR'S WORK.

In my report for the quarter ending March 30, 1902, I outlined the policy to be pursued for the balance of the year by the various bureaus under my care. This policy I briefly restate as follows: For the Bureau of Highways the policy was as follows:

1. Preference will be given blocks where property-owners contribute half the cost of repaving.

2. Smooth pavements will be laid as far as possible alongside hospitals and on direct approaches to them.

3. Smooth pavements will be laid as far as practicable adjoining public schools.

In connection with hospitals and schools, churches will be considered.

4. Gaps between present smooth pavements will be filled as far as practicable where filling such gaps completes a thoroughfare. In doing this a smooth paved route from the Borough Hall to the Williamsburg Bridge is planned.

5. After the above (and not until then) new thoroughfares will be considered.

6. Except as included in the above, no isolated blocks will be considered.

The technical difficulties arising from the language of the Charter have prevented any considerable contributions by property-owners toward the cost of repaving. But one street (Varick avenue) is being done on this basis. It was attempted

on twenty other streets, but the legal difficulties proved insuperable. In view, however, of the willingness of property-owners to contribute, evidenced by their signatures, preference has been giving to those streets in our repaving work, and they have either all been done or are under contract now to be done at the public cost, as was the case throughout the year with the repaving work generally.

Thirty-one school-houses, twenty-five churches and nine hospitals have had asphalt pavements laid adjoining them. Gaps between existing pavements have been filled all over Brooklyn and new through lines of modern pavement laid with definite plans for their extension during the year 1903, so as to reach the distant points of the borough. One can now ride over smooth pavements from the heart of the Fulton street shopping district nearly to the Queens County line, via De Kalb, Willoughby avenue and Suydam street. When contracts now made for Third avenue are completed, a similar route over modern pavements will exist from the borough's centre to the lower bay. By the improvement of Flushing, De Kalb, Willoughby and Clermont avenues, with connections in the Williamsburg district, routes have been made connecting the Brooklyn Bridge with the Williamsburg Bridge, which will be extended in 1903. A further through route has been made adjoining and parallel to Fulton street by repaving Lefferts place and Herkimer street, providing a direct route over asphalt pavements from St. James place eastward to Albany avenue; this will be extended to the Twenty-sixth Ward in 1903.

Fourth avenue has been improved from Fortieth to Fiftieth streets, with an asphalt pavement and with park strips twenty feet wide placed in the centre of the street, which, with the kind co-operation of the Hon. Richard Young, Commissioner of Parks for the boroughs of Brooklyn and Queens, have been planted with trees and shrubs so as to make what was a stone wilderness a beautiful and attractive avenue. This will be extended to the north in 1903.

Albany avenue has been extended with asphalt through to Lincoln road, from which point to Clarkson street a macadam improvement is under contract; this joins another macadam improvement on Clarkson street, thus making a through connection to Flatbush avenue and via Woodruff avenue, just asphalted, to Ocean avenue, and so to all the borough beyond. This provides an entirely new and separate route to the southern outlying parts of the borough without going through or near Prospect Park, and enables one to go one way and return another. It also provides what is more important, a means of quick access for fire engines in case of fire in any of the county buildings on and near Clarkson street.

I wish here only to emphasize the fulfilment of the policy adopted when the year began, leaving to that portion of this report under the heading of "Bureau of Highways," the details of the unique record made by that Bureau.

For the Bureau of Sewers the following definite policy was announced, the construction of:

1. The so-called Paerdegat inlet sewer, from Avenue G and Coney Island avenue, eastward to a temporary sewage disposal works on Paerdegat inlet, at Flatlands avenue, not far from Jamaica Bay.

2. The so-called Foster avenue sewer, running from Sixtieth street and Fourteenth avenue, where it connects with the main trunk sewer (the Bay Ridge tunnel sewer), now constructing, to discharge at the foot of Sixty-fourth street into New York Bay, eastward through Sixtieth street, Nineteenth avenue and Foster avenue, to the junction with its Bedford avenue branch at Bedford avenue and Flatbush avenue, with a branch in East Fifteenth street, to a point near Ocean avenue and Prospect Park.

3. The so-called Ninety-second street tunnel sewer, discharging into New York Bay at the foot of Ninety-second street, draining the greater portion of the old town of New Utrecht, and providing outlets for several sewers now existing without them.

4. The so-called Bushwick Creek sewer, running from Engert avenue and North Henry street to the East river at the foot of Quay street.

The work thus outlined has been carried out. The contract for the Paerdegat inlet sewer was made September 6, 1902. At this date over 3,600 lineal feet, varying in size from 42 inches to 84 inches are completed and the work is progressing from several points simultaneously. The Bedford avenue sewer contract was made September 20; over 2,700 lineal feet, in size from 60 inches to 90 inches in diameter are completed and the work proceeds steadily.

Construction has been begun on the eastward extension of the great trunk sewer from Sixtieth street and Fourteenth avenue, and it is under contract as far as Nineteenth avenue and Fifty-seventh street. The two remaining sections to complete the Foster avenue sewer are authorized by the Board of Estimate and Apportionment, plans are prepared and they will be in actual construction with the early spring of 1903. These will unite the eastward extension from Sixtieth street and Fourteenth avenue with the Bedford avenue sewer, forming with this and the Bay Ridge tunnel sewer, a great trunk main and providing drainage for over 60,000 people in Bay Ridge and Flatbush.

The Bay Ridge tunnel sewer has itself progressed as follows:

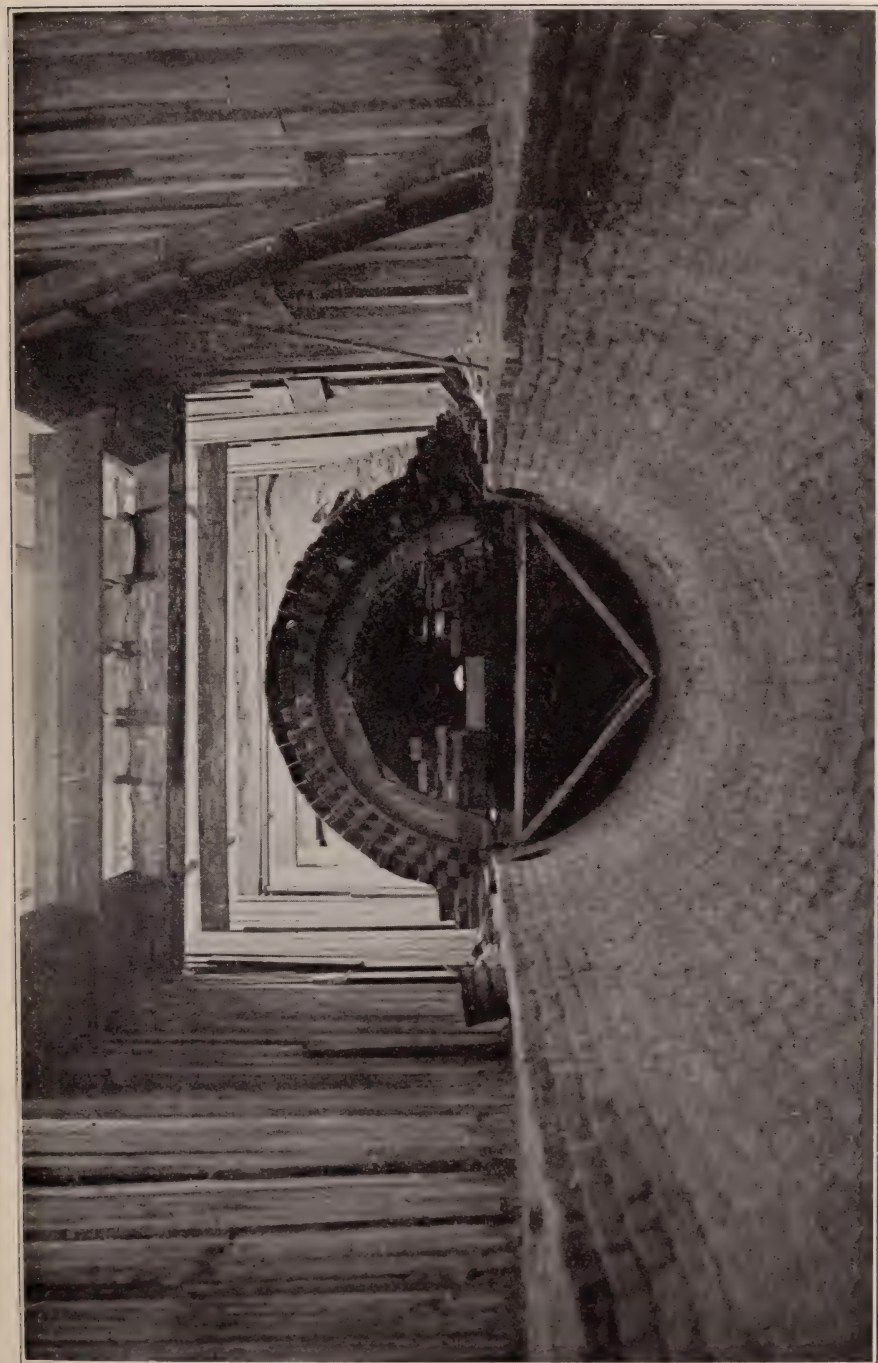
1,429 linear feet of 160-inch brick sewer constructed in tunnel.

968 linear feet of 160-inch brick sewer constructed in open cut.

185 linear feet of 168-inch brick sewer constructed in tunnel.

Other lengths in sizes ranging from 54-inch brick sewer to 12-inch pipe sewer, amounting to 939 feet, have been constructed, making a total of 3,571 feet, nearly three-quarters of a mile. In prosecuting this contract, work has been performed at five different shafts, working nine headings, or two headings for each shaft, excepting one, besides at two other points in open cut construction.

Contract for the Ninety-second street tunnel sewer was signed November 20, and, on December 3, contractors James Malloy & Co. were instructed to commence work. The amount of the contract is \$633,256.25.



EIGHTY-FOUR-INCH SEWER IN CONSTRUCTION ON AVENUE F, NEAR EAST THIRTY-EIGHTH STREET.
PART OF SO-CALLED "PAERDECAT INLET" SEWER.

The Bushwick Creek sewer has been approved by the Local Board of the Williamsburg district, and is now pending in the Board of Estimate and Apportionment. As with the Bureau of Highways, the above matters are here mentioned merely to show the fulfilment of the policy adopted and the work of the Bureau of Sewers as a whole will be reviewed under that heading.

In connection with the Bureau of Public Buildings and Offices, I pointed out on April 1, 1902, that the important matters included in the policy of this bureau were the construction of interior baths, to be opened all the year round, and of public comfort stations, and stated that the construction of a new Court House on Gates avenue, near Marcy, on the site formerly occupied by the Ninth Precinct station-house, had been undertaken subject to the approval of the Board of Estimate and Apportionment. In that same report it appeared that the plans and specifications for altering and enlarging the Hall of Records were preparing.

Pursuant to the appropriation of the Board of Estimate and Apportionment for two interior all-year public baths, contracts have been made for both buildings and the work of construction is proceeding. One is at Hicks street, near Degraw street, costing \$54,564; the other on Pitkin avenue, near Watkins street, costing \$79,300. They are the first baths of this kind in Brooklyn, and jointly will provide bathing accommodations for about 4,000 persons daily of both sexes.

Bids have been received under plans approved by the Municipal Art Commission for the construction of six underground public comfort stations, to be located as follows:

Fulton and Joralemon streets, adjoining Borough Hall.
 *Fulton street and Flatbush avenue.
 Liberty avenue and East New York avenue.
 Hamilton avenue and Richards street.
 Broadway, Throop avenue and Lorimer street.
 Greenpoint and Manhattan avenues.

*This site has since been changed.

Four of these stations will be under construction before this report can be printed; all the public comfort stations and both bath buildings are intended for use by May 1, 1903.

On April 3, 1902, I summed up the policy of the Bureau for the rest of the year in a letter to you thus:

“Bureau of Highways—Repaving on the largest scale possible; street openings as rapidly as possible; repairs as completely as possible.

“Bureau of Sewers—The early authorization and prompt construction of the four (4) great sewers above outlined.

“Bureau of Public Buildings and Offices—The construction of the public baths and public comfort stations as promptly and well as possible.

“It is assumed in the above that the ordinary operations of these bureaus will proceed with regularity and care.”

It is a satisfaction to report that this work has been done as promised. I, therefore, pass to consider more in detail the work of the several bureaus.

OFFICE OF THE ASSISTANT COMMISSIONER OF PUBLIC WORKS
(IN CHARGE OF CONTRACTS, INCLUDING THE ADVERTISING AND RECEIVING OF BIDS FOR ALL
DEPARTMENTAL PURPOSES).

The annual report of the Assistant Commissioner of Public Works, which is attached hereto, shows that contracts have been made throughout the working portion of the year at an average rate of one every day. The estimated cost of 265 contracts was \$4,243,342.84; 93 of these contracts were for asphalt pavement improvements (including repaving), at a cost of \$1,222,916.33. Twenty-five were for granite and Medina sandstone pavement improvements (including repaving), at a cost of \$463,454.84.

Thirty-nine contracts have been made for constructing sewers, costing \$1,507,447.57. Three contracts have been made for constructing buildings in the Bureau of Public Build-

ings and Offices, costing \$456,637. The following summary is copied from the report of the Assistant Commissioner:

CONTRACTS MADE DURING THE YEAR.

181	Bureau of Highways.....	\$1,971,578	60
55	Bureau of Sewers.....	1,527,979	13
6	Bureau of Public Buildings and Offices.	466,614	24
241		\$3,966,171	97
24	Contracts pending.....	294,271	34
265	Contracts. Total	\$4,260,443	31

This work has been done with a total force of five (much of the year four) in the Assistant Commissioner's office. The promptness and accuracy with which this work has been done may be judged from the fact that at the date of this report every contract that has been signed has been registered by the Comptroller.

BUREAU OF HIGHWAYS.

Mr. Nelson P. Lewis was Chief Engineer of this Bureau until March 10, when he became Engineer of the Board of Estimate and Apportionment, and he was succeeded as Chief Engineer of Highways by Mr. George W. Tillson.

The following items taken from the report of the Chief Engineer of Highways attached are here presented for emphasis; they present the remarkable work of this Bureau during 1902 so forcibly that "he who runs may read."

There are 576.53 miles of paved streets in Brooklyn; this is a greater total mileage of pavements than in the two boroughs of Manhattan and The Bronx jointly. The present pavement mileage of Brooklyn, compared with that of December 31, 1901, is as follows:

	DECEMBER 31, 1901.	DECEMBER 31, 1902.
Asphalt	95.14 miles	117.40 miles
Granite.....	119.87 "	125.47 "
Cobble	216.80 "	193.85 "
Belgian	46.61 "	46.48 "
Macadam.....	82.15 "	87.06 "
Brick.....	5.31 "	4.93 "
Trap block.....	.78 "	1.08 "
Medina.....	.....	.18 "
Wood .....	.....	.08 "
Total.....	566.66 miles	576.53 miles

When present contracts for repaving shall have been completed the mileage of cobble will have been reduced to 186.06 miles, and that of asphalt and granite correspondingly increased. The amount of new pavement in miles put under contract during 1902 compares as follows with the total work of the kind in the four years, 1898 to 1901, inclusive:

	1902.	1898-1901 INCLUSIVE.
Asphalt.....	30.01 miles	27.19 miles
Granite.....	8.09 "	6.38 "
Macadam	1.51 "	3.23 "
Trap block.....	.17 "	1.09 "
Medina sandstone.....	.18 "	.00 "
Wood	.08 "	.00 "
Cobble .....	.....	.12 "
Belgian.....	.....	2.48 "
Total... ..	40.04 miles	40.49 miles

It will be seen that only the laying during the four years, 1898-1901, inclusive, of 2.48 miles of Belgian pavement—a type now discarded—prevents the record for the year 1902 exceeding the total of the four previous years. It does exceed that total in the two leading items of asphalt and of granite. The distribution of the new pavements throughout the various sections of the city is clearly shown by the appendices A B and C attached to the report of the Chief Engineer of Highways. The total of completed pavements finished during the year is as follows:

Asphalt	22.27	Miles.
Granite	6.43	"
Trap Block.....	.31	"
Medina Sandstone.....	.18	"
Wood	.08	"
Macadam	4.97	"
Total	34.24	Miles.

This is the largest total mileage of pavements ever laid in any one year in Brooklyn. The macadam pavement above was wholly laid under private contract.

Three colored maps accompany this report to which your attention is respectfully asked. One shows the new pavements put under contract during the year 1902 and also the pavements repaired during that year. One shows the pavements other than cobblestone existing in Brooklyn on January 1, 1903. This includes those completed and those under contract to be done on this date, but not yet complete. The third map shows the streets on which opening proceedings were carried on during 1902.

During the year, 188 contracts have been prepared and closed in the Bureau of Highways to the aggregate value of \$2,005,930.87. Of this sum the following amount was expended for repaving as stated:

Asphalt	\$1,022,299 05
Granite	365,363 52

Medina Sandstone.....	\$10,743 70
Curb and granite foundation for wood pavement	1,512 90
Total	<u>\$1,399,919 17</u>

Under the able direction of Mr. E. J. Fort, Assistant Engineer in Charge of Street Repairs, the following exceptional record has been made by this division:

PAVEMENTS RELAID AND REPAIRED BY REPAIR GANGS.

	MILES.	SQUARE YARDS.	COST.	COST PER SQUARE YARD.
Granite	3.35	25,481	\$12,559 54	\$0 49
Brick	2.01	10,905	5,566 28	51
Cobblestone	28.29	191,506	69,626 23	36 $\frac{1}{3}$
Macadam	13.39	227,057	40,926 00	18
	<u>47.04</u>			

If to the 47.04 miles of old pavements relaid and renewed by the repair gangs be added 34.24 miles of new pavement, laid in the borough during 1902, it will be seen that 81.28 miles of streets in Brooklyn have been, during the year 1902, either relaid with fine modern pavement or had their old pavements repaired and renewed. This is in addition to repairs made by contractors on asphalt pavements still under guarantee and to the asphalt pavements out of guarantee repaired by this Bureau, for which last the sum of \$40,417.76 was paid during the year. In other words, the 81.28 miles of pavements laid new or renewed during the year affected only such streets as were not one year ago asphalted, but were confined to repaving and repairing the streets that had stone pavements and the macadam streets. There were, on December 31, 1901, 471.5 miles of such streets as were affected by the expenditure for repaving and repairing, whence it appears that rather more

than 17 per cent. of all the streets demanding such work in the whole borough have either been repaved or repaired during the year. And even this omits the 10.61 miles of new pavements under contract but yet uncompleted. The greater part of the macadam streets repaired as above have been resurfaced with four inches of broken stone, practically relaying the pavement.

I ask your special attention to the details given in the report of the Chief Engineer of Highways concerning the method and cost of making asphalt repairs. The present system was adopted in 1901 and has demonstrated its merits. The average cost of repairs per square yard for maintenance of the 698,566 square yards of asphalt pavement maintained was \$0.0579 cents; leaving out the railroad streets, this average cost is but \$0.0418 cents; the cost of the method formerly in use was \$0.1593 cents. The effect of street car tracks on asphalt pavement is clear from the fact that the average cost per square yard of maintaining asphalt paving on a railroad street was \$0.178 cents, three times the general average cost and four times the cost of the average for streets where there were no tracks.

A serious difficulty throughout the year has been the lack of men and means to care properly for the suburban roads, both those paved with macadam and those without pavement. The borough has not had a modern road-making or road-repairing plant adopted for use in the suburban districts. Our experience in 1902 proving it desirable, such a plant has been procured out of funds saved by economical administration on the part of the Chief Engineer of Highways, and, therefore, available for this purpose. There have been purchased—

- 2 Horse scrapers for macadam pavements;
- 2 Street-sweeping machines;
- 2 Road machines (see illustration) :

—together with a complete equipment of such smaller tools as are necessary. Two steam rollers and a portable stone crusher have also been bought.

I note with pleasure in the report of Assistant Engineer E. J. Fort, herewith, that the macadam scraping and the sweeping machines have already saved a sum much larger than their cost, although the machines were purchased but a few weeks before work ceased for the season. By means of these modern apparatus and with a slightly larger appropriation for 1903, for the care of our suburban roads, we shall be able to organize a permanent force in the suburban districts that will do more than ever before to keep their highways in fair order.

A large quantity of cobbles taken up in repaving have been accumulated in the various yards of the Bureau, and we shall use the engine of one of the rollers for operating the new stone crusher in breaking up these cobbles into small broken stone for making concrete foundations and for use in repairing macadam roads. Following such use of this apparatus it has been arranged that the paving gangs of the Bureau of Highways shall, during the year 1903, repave several granite streets on a concrete foundation in the most modern way. This is the first time that the Bureau has been equipped to undertake work of this class. Among the streets which it is hoped thus to repave with our own gangs are Beaver street, portions of Central avenue, Atlantic avenue, from Henry street to South Ferry, and Fifty-second street, from Second to Fifth avenues.

On April 1, 1902, as per quarterly report then presented, the specifications for repaving with asphalt were awaiting the approval of the Board of Estimate and Apportionment. All contract forms were still in the printer's hands and no appropriation had been made by the Board of Estimate and Apportionment for repaving. No contracts for paving were, therefore, made during the first quarter of the year. Almost no construction work was done during the same period.

The first bids were opened May 14, 1902. By doing its engineering work in advance, however, this Bureau was able during the second quarter of the year to advertise sixty-six streets for repaving, and prior to July 1 work was actually begun on eight streets.



ROAD MACHINE.

During the third quarter 4.91 miles of asphalt, 2.12 miles of granite and .14 miles of other new pavements were laid and 76 additional repaving contracts were made. Out of a total of 34.24 miles of new pavements laid during 1902, 19.74 miles were laid during the last three months of the year. This last is an unapproached record for the time and points forward to what may be done in 1903, with many of the difficulties removed which prevented construction in the early months of 1902.

The asphalt specifications in use throughout the year were those which, after being carefully revised by the Chief Engineer of Highways, yourself and myself, were approved by the Board of Estimate and Apportionment. By reason of the fair competition permitted by them the price of asphalt pavement has been reduced from an average of \$2.83 per square yard in 1900 and 1901, to an average of \$1.79 in 1902; this price includes the grading, the concrete foundation and laying the asphalt pavement itself. During the year 1902 the amount of \$1,399,919.17 was expended for repaving as compared with \$1,580,887.06 in the four years, 1898-1901, inclusive, but the smaller sum did by far the larger work by reason of the fall in the price of asphalt pavement. This fact, with all that it implies, should justify the administration of the borough authorities in the eyes of the people of Brooklyn.

The details given show that the cobble is still the prevailing pavement in Brooklyn, and, in fact, we have in this borough more than nine-tenths of the cobbles that are in the greater city. It is the intention of the Bureau of Highways, during 1903, to replace these cobbles as rapidly and economically as possible with modern pavements of approved kinds. The two blocks of Medina sandstone pavement have proved successful and the use of this material will be extended next year. It is the intention also to extend the granite pavement of the same high class in 1902. The experimental block of wooden pavement on State street between Hicks and Henry streets will be followed during 1903 by an extension of this material where it seems suited to local conditions.

The repaving work upon 87 different streets (and also that upon original improvements elsewhere) has been under the constant supervision throughout the year of the Engineers of the Department of Finance and the Commissioners of Accounts, as well as of our own technical and supervising force. No criticism has been made by either of these departments on seventy-six out of the eighty-seven streets named, neither has any criticism whatever been made on any street by any one regarding the character of the pavement itself. The Assistant Engineers of the Bureau of Highways adversely reported upon the concrete foundation of three streets; on one the concrete was all removed and replaced by order of the Chief Engineer of Highways, and on a similar order a large part of that on two other streets was likewise replaced by the contractor. In one case the concrete under the granite pavement was found defective after the pavement was laid, and a deduction to cover the fault was made by the Chief Engineer of Highways with my approval, and the whole subject referred to the Comptroller for settlement.

All the adverse criticism made during the year by the two supervising departments mentioned above were on eleven streets, which includes the four above mentioned, and they dealt wholly with concrete and cement. The criticisms, save in the four cases mentioned, were found, on careful examination, to be unfounded. For some reason the supervision of the two departments named is not extended to the work of the Bureau of Sewers. I have been at a loss to understand this, for the cost of the work done by the Bureau of Sewers aggregates many millions, and there would seem no reason why it should not have the benefit of this supervision as well as the Bureau of Highways.

Rarely, if ever, has public work been inspected more sharply than that in the Borough of Brooklyn during 1902. In addition to the force of three Assistant Engineers—now increased to four—constantly visiting the various places where the work was proceeding, both the Chief Engineer of Highways and



WOOD PAVEMENT ON STATE STREET, BETWEEN HICKS AND HENRY STREETS.

myself have frequently inspected the progress of the work. There is very little of the paving done during the year that I have not thus personally seen, and it has been the regular habit of the Chief Engineer of Highways and myself, personally, to test the concrete foundation prior to the laying of the pavement thereon. It has been difficult at all times to obtain from the Civil Service Commission a sufficient number of Inspectors of Grading and Paving to supervise the work; our demands exhausted their list, and even the temporary appointments certified to by them failed to provide the full force necessary so that much of the time we have been short from four to six men.

The quality of the pavements laid throughout the year is, as a whole, exceptionally fine, both as regards the concrete foundation and the granite and asphalt pavements. In this connection the report of Mr. W. H. Broadhurst, the chemist in charge of the chemical and physical testing laboratory of the Bureau of Highways, is of great interest. From this it appears that 1,311 samples taken from the work under construction have been by him made the subject of careful tests, and the table attached to his report shows by name tests of twenty-four different kinds of cement used in our work with the various results therefrom. The report of the chemist is respectfully commended to any one who may think of undertaking the somewhat hazardous course of attacking the character of the work done in Brooklyn in 1902.

The inspectors in charge of the paving work have been held to a rigid account. Two were dismissed from the public service for permitting poor work. One contractor was obliged to take up and reset eleven blocks of curbing beneath which he had failed to place proper concrete. I affirm and am prepared to prove that not only has there never been as much pavement laid in Brooklyn in any one year as in 1902, but never, as a whole, has the work been of such high quality.

Your attention is asked to the record of sidewalks repaired, taken from the report of the Chief Engineer of Highways presented below. The sidewalks of Brooklyn have for years

been in very bad order, partly as a consequence of the condition of our pavements and partly because no concerted effort has, to my knowledge, been made to urge upon the property-owners the necessity of putting and keeping their sidewalks in good order. Serious accidents arising from the bad condition of the sidewalks are not infrequent, and the City has lost many thousands of dollars in damage suits arising therefrom. The record of contracts made in 1902 compared with that of the previous four years for this class of improvements is as follows:

	1902, SQUARE FEET.	1898-1901, INCLUSIVE, SQUARE FEET.
Flagging sidewalks.....	138,140	143,122
Cement sidewalks.....	143,500	68,094

As these contracts are not all completed, the record of work actually performed is presented, recalling that this work, whether laid by public or private contract, has chiefly been done at the instance of the borough authorities.

Bluestone flagging laid by public contract in 1902.....	60,127 sq. ft.
Bluestone flagging laid by private contract in 1902.....	162,909 "
Reflagging done in 1902.....	3,874 "
Concrete sidewalk laid by public contract in 1902.....	17,452 "
Concrete sidewalk laid by private contract in 1902.....	628,060 "

If this be compared with the totals for the four years previous as above the advance will be clear. In addition there was laid on streets not regularly opened and not under the jurisdiction of the Bureau of Highways, by private contract, 466,815 square feet of sidewalks.

Special inspectors of sidewalks have been sent to give notice to the owner or occupant wherever sidewalks were defective that the same should be repaired. This was done throughout Fulton street, Myrtle avenue, Flatbush avenue and other streets. Special notices for this purpose have been printed for use during the winter, and as our repaving work is closed, ten

inspectors have been assigned to examine the sidewalks and notify citizens to have them repaired as soon as the weather permits. It is gratifying to record the good will and promptness with which these requests have been met by the public; in one street over 90 per cent. of the requests to repair sidewalks were at once granted by the property-owners, and there has been no hesitation to undertake the work by any considerable number of the citizens notified.

In the case of Hendrix street, where petition was presented for original flagging, two inspectors from the Bureau of Highways, acting under the direction of the Supervisor of Complaints, conferred with all the property-owners, and I am advised that every one of thirty or more owners on this street have undertaken to do the work of flagging by private contract without the intervention of the authorities. There are few of the minor details of work upon the public highways that will add more to the safety and convenience of the people of Brooklyn than the putting of the sidewalks in good repair.

The granite pavements throughout the borough have been very largely laid upon a sand foundation; for this reason and as the result of constantly tearing them up for the installation and repair of water, sewer, gas and electric wire conduits and connection pipes, many of them are in a very rough condition, some so bad that they should be entirely relaid when funds permit. To minimize this difficulty for the future an important change has been made during 1902. Nearly all the granite repaving during 1902 has been done upon concrete foundation with tar and gravel or cement joints, and with your approval this same policy has been adopted with original improvements of this class. Three streets only have been repaved with granite on sand, namely, two blocks on Melrose street and one short block each on Adams and Johnson streets, where the property-owners preferred to take such pavements rather than to wait until better ones could be laid. Certain old authorizations exist that are incomplete for granite on

sand, but when these are once down all new work will be placed upon the permanent basis now adopted.

It has further been arranged that from this date forward all such persons or corporations as may remove, for any purpose, portions of the granite pavements laid on sand now on most of the principal thoroughfares, shall restore such pavements over their trenches and connections on a concrete foundation with tar and gravel joints.

Instead of disbanding the whole street working force as the winter came on and starting the work of the coming spring with new men, strange to the work and with strange foremen, it has been determined to employ as much of the force as practicable throughout the winter. This permits doing some important work not possible at other seasons; provides some employment for worthy men, and, most important of all, permits our starting the regular work of the year 1903 with experienced men, accustomed to the work, to their foremen and to us, the advantage of which is great. The special work upon which these men are now employed is that of emergency street repairs in the city and suburban districts, repairing and partial reconstruction of sidewalks in the more distant parts of the borough, the construction and cleaning of cesspools for temporary drainage of roads where there are no sewers and other such work of this kind, which may be called a "toning up" of the streets and roads, so far as it can be done at this season. In addition, in stormy weather, these men clean crosswalks and the inlets to sewer basins from snow and provide emergency relief when needed in flooded districts. In a recent snowfall, eighteen important avenues thus received care by twenty-two gangs of these men to the great assistance of the Street Cleaning Department and the general public relief. In addition, the asphalt pavements in slippery weather are sanded by these gangs, and many accidents to horses are thus prevented. A special list of important streets and localities is prepared, and these are sanded first, and then if time permits the sanding is extended to other asphalted streets. For the extension of this



STREET SANDING MACHINE.

work two special sanding machines, one costing \$600 and the other \$350 have been purchased which will do this work with far greater economy and celerity than is possible by hand. In a borough as large as this, with over 100 miles of asphalt pavements and heavy traffic, it is altogether possible that these machines may save their full value any slippery day in preventing accidents to valuable horses.

Table No. 10 in the report of the Chief Engineer is of special value as showing the cost of maintenance of asphalt pavements during 1902, according to the length of time for which the pavement has been out of guarantee.

A contract has been made with Mr. Julius Cæsar, Jr., for four thousand blue and white enameled street signs, erected with brass screws, at a cost of 56 cents each; over 2,700 of these have been erected and the contract will be promptly completed. The Chief Engineer of Highways has been instructed to fully equip the streets lighted with Welsbach lamps, with red and white curved glass lamp signs fitted to such lamps; a list of the locations is preparing and the contract will shortly be made which will include the replacing of these signs where broken. Instructions have also been given to place street signs of the standard pattern on the capped lamp-posts throughout the borough at intersections where such posts exist and signs are needed; the contract for these is expected soon to be made.

Careful study has been given to the matter of illuminated street signs. Samples of the reflecting illuminated signs have not proved adapted to the peculiar conditions in this borough where the lamps are ordinarily swung at a distance of some nine feet from the centre of the pole on which the sign must be erected; it has been necessary, therefore, to reject the bids received for this class of sign. Investigation has been made of a type of illuminating sign which is lighted by gas or electricity from within, and a satisfactory pattern has been found which has been approved by the Municipal Art Commission; specifications have been obtained and it is expected early in 1903 to let the contract for a considerable number of these

signs, both for gas and electric lamps on our principal thoroughfares. In addition to the above, arrangements have been made for adding to the number of plain glass signs in the ordinary gas lamp-posts and for replacing those that are broken. The above item of Welsbach lamp signs, also those that are on the ordinary gas lamps and on the capped lamp-posts have recently been turned over to us by the Department of Water Supply, Gas and Electricity, which has heretofore given them care; by consent we have taken up this work and the whole matter of street signs is now concentrated in the hands of the Bureau of Highways.

The following yards are now used by the Bureau of Highways in their operations:

North Eighth street, near Union avenue, Wm. O. Platt, agent, \$750 per year; lease expires May 1, 1903.

Lexington avenue, near Broadway, H. C. Bauer, owner, \$500 per year; lease expires May 12, 1903.

Lexington avenue, near Stuyvesant avenue, N. Espenscheid, owner, \$500 per year; lease expires May 1, 1903.

Sixty-seventh street, near Eighteenth avenue, George W. Hanley, owner, \$650 per year; lease expires August 1, 1903.

Wallabout place, City owner.

Douglass and Nevins streets, City owner.

Hopkinson avenue near Marion street, City owner.

Hart street near Irving avenue, City owner.

Gravesend avenue, near Neck road, City owner.

It is in the yard on Wallabout place that we shall install the stone crusher for breaking cobble.

In the Topographical Bureau, in charge of Mr. George J. Bischof, Assistant Engineer, a great deal of work has been done to bring this important work more closely up to date than it has heretofore been. Although the number of maps asked by the Corporation Counsel's office in 1902 was 158, compared with 90 asked for in 1901, the work of the Topographical Bureau has more than kept pace with the demands upon it.

On the 1st day of January, 1903, there were making in this Bureau and not delivered:

Rule Maps.....	11
Draft Damage Maps.....	21
Draft Benefit Maps.....	6
Final Benefit and Damage Maps.....	8
Total	<u>46</u>

This represents the accumulated work in the office. From Mr. Bischof's report I take the following:

RESUME OF WORK COMPLETED DURING 1902.

All receipts of petitions for street openings and improvements.

All maps and technical descriptions for public work.

All filed maps requested in the year 1902.

All rule maps requested prior to June 2, 1902.

All draft damage maps requested prior to May 20, 1902.

All draft benefit maps requested prior to October 23, 1902.

All final damage and benefit maps requested prior to October 23, 1902.

Subsequent to the dates given above a number of maps have been delivered in each case. Attention is again directed to the map, showing streets where opening proceedings have been carried on in 1902.

It is a satisfaction to report that the relations of this Department with the public service corporations using the highways of the borough are satisfactory. Such friction as has from time to time arisen during the year has been adjusted to the advantage alike of the public and of the corporations concerned. In February and early in March an examination was made of all the railroad streets throughout the borough, and a detailed report was presented by the Chief Engineer of Highways, showing what repairs were necessary between the tracks and rails to be done of the railroad companies. The corporations concerned were at once instructed to take up this work, and while it would certainly be too much to say that all has

been done, a very considerable amount of street repairs has been made, and special attention has been given to specific cases of importance. Throughout the year there has been a great scarcity of materials, and not only the regular work of paving and repaving on the part of the City and its contractors has been delayed, but so also has that of the street railway corporations in making the necessary repairs. There is almost no kind of supplies that has not at one time or another failed. The price of granite paving blocks on bids received by the Bureau of Highways in the early spring was such as to require the rejection of all bids, and there has been a great scarcity of this particular class of material throughout the year. The exceptional amount of asphalt paving done during the year has also prevented the repairing of the defects between the tracks and rails of the street railway companies as rapidly as could be desired. This same difficulty has required the laying over until 1903 of much of the work of repaving street intersections. While, therefore, a great deal has been done by the street railway companies in the matter of street repairs, it is hardly surprising that all has not been done. Indeed, the mileage of the borough is so great that it would be too much to expect that all could be done in one season; it is the purpose of the Bureau to press this matter forward during the coming year. Meanwhile after some hesitation and discussion of their rights and duties in the matter, the largest street railway company of this borough has definitely undertaken, at my request, the replacing of the cobbles with modern granite pavements on a concrete base with cement joints on the railroad streets where the City itself was repaving. In this way a large part of Third avenue has been repaved between the tracks and rails and similar work has been done on Hoyt street, Rockwell place, Morgan avenue and other streets. A total of 1.49 miles of double track was thus repaved up to the time when cold weather suspended the work for the winter. A request made by the railroad company for permission to repair the cobbles on Flatbush avenue, from Malbone street and Church avenue, was refused,

and after due notice a contract was made by the City for replacing these cobbles with a granite pavement on concrete base with tar and gravel joints, for the cost of which work the Corporation Counsel will be requested to bring suit against the railroad company in order that the rights of the City and the company may be determined. In like manner, also, action has been brought by the Corporation Counsel at your and my request for the cost of asphalt pavement between the tracks and rails on Greene avenue.

In addition to the above the Coney Island and Brooklyn Railway Company has repaved with granite on concrete base the space between its tracks and rails on De Kalb avenue, from Fulton street to Clinton avenue, and on Prospect Park, West, from Ninth to Fifteenth streets, nine-tenths of a mile in all.

On June 13, 1902, the disconnected tracks long unused on Humboldt street, between Grand street and Meeker avenue, twelve blocks in all, were removed by the forces of this Bureau, and at a later time the unused siding was removed by us from Bush street, between Smith street and Hamilton avenue. Later, by arrangement with the Brooklyn Heights Railroad Company and Coney Island and Brooklyn Railroad, the unused sidings have been taken by them from Flushing avenue, between Marcy and Nostrand avenues; Nostrand avenue, between Park avenue and Floyd street; Fifth avenue, from Twenty-fifth street, 500 feet, south; Prospect Park, West; Thirty-ninth street, from Second avenue 250 feet east (two tracks), and a number of other streets; it may safely be stated that more than five-sixths of the tracks of this character have been removed, and such as remain do so either for good and sufficient reasons or are unimportant.

One of the important improvements now proceeding is the transformation of the great railroad cut between Thirty-eighth and Thirty-ninth streets into a tunnel. The Brooklyn Rapid Transit Company are constructing a brick tunnel arch at the bottom of this cut with the intention of filling up the cut over the arch to the general grade surface. This huge, un-

sightly cleft through a region just back of the water front has long been an eyesore in that part of the borough, and its removal will be a great blessing. It will restore to the public Thirty-eighth street, which has partly fallen into the cut, and will bring into use much valuable land now wholly unavailable. The company is now proceeding with the work from a point near Fourth avenue to a point about 50 feet east of Sixth avenue, and it is contemplated that at a later time the tunnel will be extended and filled above it so that eventually the entire cut will be removed.

The Long Island Railroad Company has been induced to take up, actively, the question of eliminating its grade crossings on the main line from Bay Ridge to and through East New York. Several conferences have been had with the president of the company and with its engineers, and preliminary plans suggested, which have met in general with the approval of the Chief Engineer of Highways and myself. They provide for the removal of the grade crossings without seriously interfering with any of the principal avenues constructed or planned throughout the borough. If they are carried out the locality known as Manhattan Crossing will cease to be a maze of railroad tracks, for these will disappear from the surface into the tunnels. I regard this contemplated change in all its features as one of the most important improvements pending in the borough. It can never be carried out as cheaply as now, for along a large part of the railroad line no streets are as yet constructed, and the annoyance and damages consequent to the change will be at present very slight. If this matter is deferred long we are likely to have the recurrence of the conditions heretofore existing on Atlantic avenue with the ensuing damage while these conditions last, and the consequent heavy expense of removing them later on. If it is considered that the plans of the Pennsylvania Railroad Company include the transshipment of freight in large quantities from their new freight terminal now building at Greenville, New Jersey, to the terminal at Bay Ridge, so that the Bay Ridge Division

of the Long Island Railroad Company, from Bay Ridge to and through East New York, will become for freight purposes practically the main line of the Pennsylvania Railroad for this class of traffic, it will be seen that the removal of the grade crossings should be made as quickly as possible in order to prevent a condition of affairs which will be before many years intolerable.

Complaints having been made in May of the obstruction of King street by it having been shut off by a fence built by the New York Dock Company, the fence was, after due notice and after advice of the Corporation Counsel, removed by the Bureau of Highways. It was later replaced by the Dock Company under the protection of an injunction from the Supreme Court, but pending the trial of the case and its final determination, an arrangement has been made whereby the gate where the fence crosses this street is kept open by the New York Dock Company so that the public may have access.

A large amount of work has been done by the telephone, electric light and other similar corporations in placing wires under ground. This necessarily involves the tearing up of considerable distances of many prominent streets, with resulting delay to traffic and annoyance to citizens. The efforts of this Department have been confined to requiring these openings to be made as little as possible in advance of the actual work, and to be closed as promptly as possible thereafter.

Steps have been taken to have special security deposits made as security for repaving streets and sidewalks in connection with building operations, refunded promptly after the work is over and the pavements shown to be in good order. These deposits are commonly \$50 each, and there has been in the past considerable delay in getting them refunded after the work was done, to the great annoyance of many worthy citizens. The receipts now given for these deposits bear notice that when the work is done and the pavements replaced word should be sent to the Chief Engineer of Highways, and that the depositor is entitled to the refund of the money within one week after that date. This small detail will relieve a great deal of annoyance.

The report of the Chief Engineer of Highways herewith will show that there will remain in Brooklyn, after present contracts are completed, 186.6 miles of cobblestone pavements, which, I repeat, is nine-tenths of all that are in the whole city. I cannot reaffirm too strongly the statement already made as to the damaging effect of these pavements. There are many miles of these streets quite beyond repair, full of ruts and holes and in a deplorable and disgraceful condition. While it is true that over 28 miles of this particular kind of pavement has been repaired during the past year, it is unfortunately true that more than six times that amount require repairing. This is, however, simply sending good money after bad, for these pavements will not stay repaired and the work done upon them is at best but temporary. To stop this waste and for the sake of ordinary self respect and for the general convenience of the public and to prevent continual accident and damage alike to person and property, these cobbles should be at once removed. As almost all of them are here, it is from here that the impulse must come to remove them. I cannot, therefore, too strongly urge that this matter be placed in its true light before the financial authorities of the city, and that a sum of money which should certainly not be less than \$4,000,000, be appropriated for the year 1903, toward removing this annoyance. From a sanitary and a financial point of view, as well as from that of civic decency, this should be done and done at once. Brooklyn has more miles of streets than the boroughs of Manhattan and The Bronx jointly, and it must be conceded that they are in far worse condition than those in these sister boroughs. There are more miles of cobble still in Brooklyn than there are pavements of all kinds in the Borough of The Bronx. Under these conditions the appeal from the thirteen hundred thousand people in Brooklyn for this annoyance to be removed should not fall upon deaf ears.

When the Bureau of Highways was reorganized in the early part of 1902, it was put upon a purely technical and engineering basis. Its entire executive force is of this character. In



COBBLE PAVEMENT ON EIGHTH AVENUE (LOOKING NORTH FROM FOURTH STREET).

its reorganization, also, we disposed of the services of three Superintendents at \$2,500 a year each, and abolished the office of one Chief Clerk at \$2,250 a year, and one Cashier at \$1,500 a year, none of whom have been replaced. My confidence in the wisdom of making this a purely technical Bureau has been justified by the results, under the skilful and efficient management of Chief Engineer Tillson. I recommend to you and to the Brooklyn public interested in their municipal affairs to read with care the reports of the Chief Engineer of Highways and his able assistants, and the tables prepared by them as portions of their reports. They show a spirit as zealous and as enthusiastic as it is intelligent and far sighted, and I can hardly do better than to close that portion of my report which relates to their work by quoting the final paragraph of the report of Assistant Engineer Fort.

“ Without such a spirit on the part of those engaged in it, the great work of making the site of what is soon to be the greatest city of the world a more suitable dwelling place for the coming millions, of which we are pleased to believe our work an humble part, must fail of its high purpose.”

Mileage of Modern Pavements laid during		Mileage of Modern Pavements Contracted during	
1902	28.34	1902	38.53
1901	17.73	1901	14.06
1900	19.47	1900	17.38
1899	3.37	1899	6.23
1898	5.60	1898	0.00

BUREAU OF SEWERS.

JOHN THATCHER,
Superintendent.

HENRY R. ASSERSON,
Chief Engineer.

The report of this important Bureau, which is transmitted herewith, gives full details of its work. The magnitude of its operations will be seen from the fact that the value of the work under its supervision during the year 1902 has been \$4,034,819, exceeding by over \$1,800,000 the total amount of such work under supervision during any one of the previous four years. The value of contracts to be executed by this Bureau authorized by the Board of Estimate and Apportionment for new sewers during the year 1902 was \$2,170,848; this exceeds the total of such work authorized for the three years 1898, 1899 and 1901, inclusive, by over \$1,000,000, and exceeds, also, by over \$670,000, the large total authorized in 1900; this, therefore, has been a record year as regards the volume of work in hand.

There are 683.2 miles of sewers in the Borough of Brooklyn, of which 18.3 miles were constructed in 1902 (see map herewith). Table No. 7 in the report attached gives the exact mileage of each of the numerous sizes of sewers in use. The extent of the system is further shown by the fact that there have been from 1859 to 1902, inclusive, 121,242 separate connections made with these sewers. Table No. 8, in the report herewith, gives the number of such connections for each year since 1859.

During the year 1902 there have been 128 contracts in force, of which 63—nearly one-half—were new this year. New contracts have, therefore, been made throughout the year at the average rate of over one weekly.

The work of this Bureau is second to none in its effect upon the health and prosperity of the community. It will be clear from its character and magnitude that it requires both administrative and technical skill for its proper conduct. The report of the Superintendent of Sewers, accompanying which is that of the Chief Engineer of Sewers and the Superintendent of Maintenance, is submitted in the confident belief that the management will thereby be shown to have been worthy of the task.

The work of the Bureau of Sewers naturally falls under three heads—Construction, Maintenance, Administration. I have heretofore pointed out that in its constructive policy the promises made early in 1902 have been fulfilled, and the figures above cited are evidence thereof. Leaving further details, therefore, of matters of construction to be learned from the report of the Superintendent of Sewers himself, I feel warranted in directing your special consideration to certain matters of maintenance.

Obviously if the great sewer system of the City is not carefully examined, its condition is unknown and its cleaning and repairing are in any systematic way impossible. Examination, therefore, is of the essence of proper maintenance. I submit a comparative table of examination of sewers which will speak for itself.

1902. Lineal feet of sewers examined.....	1,566,592
1901. Lineal feet of sewers examined.....	766,852
1900. Lineal feet of sewers examined.....	168,650

There are no records for the years 1898 and 1899.

Examination leads properly to cleansing, and the following table, therefore, is submitted:

1902. Lineal feet of sewers cleaned (cost, \$11,721.90).....	563,435
1901. Lineal feet of sewers cleaned (cost, \$10,079.98).....	306,450
1900. Lineal feet of sewers cleaned (cost, \$9,265.01).....	342,900
1899. Lineal feet of sewers cleaned (no record of cost).....	211,421
1898. Lineal feet of sewers cleaned (no record of cost).....	131,850

In connection with such of the sewer cleaning work as was done in the Twenty-sixth Ward, the following items are of interest:

Amount of deposit taken out of Twenty-sixth Ward	
Purification Works from September 1, 1901, to March 13, 1902, seven months.....	11,782 cubic yards
Amount of deposit taken out from April 1 to October 3, 1902, seven months.....	
	<u>26,835 cubic yards</u>

There are 8,233 sewer-basins in Brooklyn, and, as the report of the Superintendent of Maintenance shows, 61,816 separate examinations of these basins have been made. Therefore each basin has been examined nearly eight times a year, or, let us say, each basin has been examined on an average once in seven weeks throughout the year. This has led to the cleansing of 14,958 basins during the year 1902, and more would have been cleaned except for the excellent reason stated by the Superintendent of Maintenance in his report herewith that "it was an impossibility for our inspectors to find enough basins that needed cleaning in the last month of the year to keep our regular force on that particular work; in fact, a dirty basin was a rarity."

But that the work of this basin examination and cleaning may be shown in its true colors, the following comparative tables are presented:

Basins Examined.

1902	61,816
1901	40,853
1900	36,073
1899	27,426
1898	<u>13,576</u>

Basins Cleaned.

1902	14,958
1901	9,241
1900	8,760
1899	8,596
1898	<u>6,516</u>

Cost of Cleaning Basins.

1898. Work done by contract, at.....	\$4 75 per basin
1899. Expended in wages, day labor, \$37,347.97.....	4 35 per basin
1900. Expended in wages, day labor, \$39,083.74.....	4 46 per basin
1901. Expended in wages, day labor, \$42,474.50.....	4 60 per basin
1902. Expended in wages, day labor, \$26,810.51.....	<u>1 96 per basin</u>

The above result was had with a force of 24 foremen and laborers, with 18 horses and carts, as compared with a force of 35 foremen and laborers, with 32 horses and carts in 1901. The Superintendent says in his report "the result has been gained by simply using business push in place of political pull." I agree with him, but I would extend the statement to cover all the operations of his Bureau. Undoubtedly the spirit of friendly competition between the several sewer basin cleaning gangs for the prizes awarded in November for the largest amount of work done between July 1 and October 1 had much to do with the record presented.

The three Sewage Disposal Works, Caissons Nos. 2, 3 and 4, at Coney Island, and the large Purification Works in the Twenty-sixth Ward were early made the subject of investigation by the Superintendent of Sewers on taking office, January 1, 1902; the following facts collated from his report are submitted here for emphasis: In the East New York Purification Works 43 men were found employed, double the number necessary; the works have been operated throughout the year with 21. There was at the beginning of 1902 an almost entire lack of supplies for the operation of the plant—we had to stop it for a fortnight in the early part of January until supplies could be had. The posted rules in these Twenty-sixth Ward Disposal Works read: "There shall be on hand at each caisson at all times supplies sufficient to last at least ten days when requisitions are drawn for same." Needless to say these had been ignored. The records of the Department show that from November 10 to December 19, 1901, these large works were idle. Their present operation shows a saving in the cost of labor of 48 per cent.



CAISSON NO. 2, CONEY ISLAND.

The three Sewage Disposal Works at Coney Island, called Caissons Nos. 2, 3 and 4, were found in a wretched and neglected condition, both as to plant and buildings. There were no pumps in them for removing sludge; it was shoveled out by hand after mixing with sawdust. The roofs were in such condition that in heavy storms the workmen had to use umbrellas when going about inside. One of the boilers in No. 2 was out of repair and useless. The chlorine gas plant at No. 4 was a wreck; I put my arm through a large hole in the bottom of one of the cast-iron kettles forming a part of it. The apparatus had not been used for nearly two years. In No. 4, also, the sewage pump in use was so badly worn that the cuts in the piston rods were distinctly seen when the pump was running full speed, and the noise of its knocking could be heard a long distance outside of the building. The maker of this pump informed me that it would cost \$900 to repair it, while he would furnish a new one for \$1,200. In this same station a centrifugal sludge pump was found standing under water. In an extended experience with machinery, I have never seen a worse case of a fine plant ruined by carelessness and neglect than in this Caisson No. 4. The rules, dated February 20, 1899, for the three Coney Island caissons, require "chlorine gas shall be generated each day and the sludge treated with the same." It is needless to say this had not been done in No. 4. Referring for details to the report of the Superintendent of Sewers, I will only say further that the three buildings are to-day in sound and perfect order, repaired and painted. Each is completely equipped with fine modern machinery, and all are in steady and successful operation. This has cost \$9,800 and resulted in a saving of about 33 per cent. in the fuel used and in the proper performance of the duties for which the plant was erected. It has been accomplished without asking an increase in the appropriation, and, indeed, upon a smaller appropriation than was had for 1901.

The working force in the three Coney Island caissons in 1901 was 63; the present force is 32, and a saving has resulted

in the cost of labor of 44 per cent. In connection with Caisson No. 2 a cast-iron 30-inch overflow outlet or by-pass



BREAK IN THE HEGEMAN AVENUE SEWER.

has been built permitting the surface water from rain to flow around instead of through the station. This cost \$2,972.29, and permits the use of the sewers on Coney Island for storm

water, so that sewer basins to receive this surface water may now be built on Surf avenue, and a resolution is pending before the Board of Estimate and Apportionment to that effect. This makes needless the construction of the proposed storm sewer on Surf avenue and saves the cost of it to the property-owners there. These same property-owners have thus been saved a good many thousands of dollars through the wise management of the Superintendent of Sewers.

The Superintendent of Sewers justly says that the repair yard at North Portland avenue was "sparsely equipped with supplies and overstocked with men." There were 45 men on the pay-roll. This was reduced by 20; with the smaller force the report shows more than double the work done as compared with 1901. This was the spot where six men were detailed to care for four horses. I approve of liberal care for "our animal friends," but one and a half men to a horse is a good deal.

On assuming office Mr. Thatcher found the 96-inch sewer on Hegeman avenue, between Alabama and Williams avenue, broken for a length of about 180 feet, so that in times of flood the sewage and surface water flowed out over the adjoining property. This sewer was constructed over the bed of a stream, without a pile foundation, and this was the third time it had burst. This particular break had been open and without repair since July 5, 1901, on which date a very heavy storm carried it away. One of the early acts of this Bureau was to make a contract for replacing the broken part of this sewer on a pile foundation in a permanent and satisfactory manner; this cost \$5,433.10, and it is believed to be a final settlement of the difficulty.

A new wooden storm outlet costing \$2,892.93 has been built at the foot of Fifteenth avenue, Gravesend Bay, replacing the old iron outlet there which was so broken that sewage was discharging into the water before reaching end of pier at that point. The wooden outlet is of a temporary character and will not be required after the Ninety-second street tunnel sewer, now progressing, is finished and the laterals are connected to it.

A 48-inch wooden trunk outlet has also been built at the foot of Sackett street to replace one broken beyond repair by the shock of the boats of the Hamilton Ferry; the new outlet, costing \$6,364.17, has been so constructed as to avoid the conditions which ruined the former one.

Thorough repairs have been made to the wooden sewer outlets at Quay street, near the East river (cost, \$197), and at the foot of North Twelfth street, East river (cost, \$175).

At the foot of Forty-third street a bulkhead under construction by the Bush Company was closing the outlet of the 6-foot sewer discharging there which relieves the sewer on Third avenue. Through the Law Department an injunction was obtained against the Bush Company preventing the closing of this outlet, and it is believed that an arrangement can be made that will be mutually satisfactory while permitting the necessary discharge at this point. On December 5, 1900, report was made to the Deputy Commissioner of Sewers that the wooden outlet to the sewer at the foot of Forty-ninth street was in bad repair, the top of it being gone in many places. Arrangements are now pending for its reconstruction and repair.

While cleaning the sewers in East New York it was discovered that when the Wortman avenue sewer, which fell in some seven years ago was replaced, most of the debris from the former work was left inside the sewer. In other words, the new sewer was constructed without removing the old one, which had fallen in; naturally, therefore, the new sewer was badly choked for some hundreds of yards, and to this extent its functions were diminished. In cleaning it about 6,000 old brick and a large amount of cement from the old masonry of the former broken sewer was removed, all of which was clogging the new sewer and damming it up. Language fails me in which to properly characterize the folly—to use no stronger term—of one who would do, or knowingly permit to be done, a thing of this kind which was on the one hand certainly injurious to the health of the public in the locality, and

was on the other hand sure to be discovered on the first thorough inspection.

Gowanus Canal has been dredged from its head to Third street. Bids were twice opened in the fall for dredging it from Third street southward, and for dredging also portions of the Wallabout and Newtown Creek canals. The prices received were so high—on both occasions—more than double the cost of the work done earlier in the season, that all bids were rejected and the matter is deferred.

Concerning the administration of the Bureau, which has been shown above to have had in its care a larger volume of work than ever before, and, as I believe, to have done it efficiently and with economy, it is necessary to say little more than can be read in the report of the Superintendent of Sewers and his associates herewith presented. It is, however, proper to point out that the office force has been reduced by fourteen persons, whose services were not necessary, and that the whole department has, with its largely expanded activities, been run at less cost than in the previous year and has asked for the coming year, though expecting to do even more work, \$38,000 less than the reduced amount had in 1902. To what is justly said by the Superintendent of Sewers and the Chief Engineer concerning the loyal assistance and support given by their subordinates, it is proper for me to add that, in connection with the plans for the great Ninety-second street sewer tunnel now under construction, the engineering and drafting forces of the Bureau went voluntarily without vacation until late in the autumn in order to push forward the preliminary work so that the actual construction under this contract might not be delayed. It is doubtful whether the contractor's work would now be progressing had it not been for this unselfish activity.

It is apparent from the record that the outside force of the Bureau has reflected the spirit shown by its technical and administrative forces, and this further appears in the fact that the sewer-basin cleaning gangs all during the winter in case of heavy snow are employed at relieving the sewer-basins and

their inlets in co-operation with the gangs of the Bureau of Highways, to the added convenience of the public who must use these streets and in assistance to the Department of Street Cleaning.

It is, I think, proper to say in this connection that the City is supposed by law to be a model employer, it pays well, the hours are short and the term of service sure as compared with other occupations. This being so, the employment of excessive numbers of men as in the Twenty-sixth Ward Disposal Works and the sewer repair yard, as above detailed, and the throwing of this working force, at times wholly out of employment, unnecessarily, so that they are idle for weeks as in the above case of the Twenty-sixth Ward Disposal Works, is an insult to industry and a mockery of management. Every honest workman desires on the one hand to do faithful work in return for his pay, and on the other hand the steadiness of his employment—to have a steady job—is for him one of the most important matters in the world. To employ so many men in the early part of a year that work cannot be found for all and by so doing to exhaust the appropriation before the year closes, so that a great establishment like the Twenty-sixth Ward Disposal Works must for five weeks cease its functions, would damn an industrial manager in the eyes of his employers and would bring him no favor in the eyes of his working force.

I concur in the recommendation of the Chief Engineer of Sewers that the relief sewers outlined by him in his report be constructed as promptly as possible. The Board of Estimate and Apportionment has now before it for approval the plans for these. Sanitary and financial reasons alike demand that they should be pushed to conclusion with the least possible delay. Most of these relief sewers have been approved at the joint meetings of the Local Boards of the districts affected, and their construction awaits authorization by the Board of Estimate and Apportionment. Certain details as to easements are now receiving care, but it is hoped that the entire system may be brought to the point of contract during the spring, and to

actual construction before the year closes. These relief sewers are to be constructed in sections of the city where sewers already exist, which while sufficient to carry the dry weather flow and surface water from a rain falling at the rate of one inch per hour, are insufficient to carry the excessive volume of surface water in a very heavy storm. No house connections will be made to these relief sewers, and they, therefore, perform no private, but wholly a public function. It does not seem to me just that the property-owners in these districts who have already paid for a sewer service sufficient for their house drainage, and ordinary rains should be expected to pay for additional relief sewers by assessment because the plans adopted by the City were inadequate to meet emergencies. I respectfully submit for consideration the recommendation that when this matter shall come before the Board of Estimate and Apportionment for its action, they be requested to take such procedure as will provide for the construction of these relief sewers as heretofore, from a bond issue at the cost of the City. In this connection it should be remembered that several of the relief sewers now proposed will form integral parts of those heretofore constructed at the cost of the City at large.

I urge also that the sewers in Seeley and other streets in the Windsor Terrace district whose outlet is through East Fifth street, Ditmas avenue and Ocean avenue, to Foster avenue, where it joins the main trunk line now building, should be constructed as promptly as possible. The district which it will relieve suffers seriously at every storm and is without hope of permanent relief until this sewer is built. Complaints have been constant and merited to you, to me and to the Bureau of Sewers, of the serious conditions arising in this locality for the lack of proper drainage, and within a few weeks the basement of the annex to Public School No. 94, on Prospect avenue, has been so flooded for this reason that the sessions of the school were temporarily stopped. This sewer has been approved by the Local Board of the district affected, but its construction must be delayed pending the legal opening of East Fifth street

from Vanderbilt street to Ditmas avenue. I, therefore, venture to request you to ask the Corporation Counsel to kindly expedite in every practicable way the proceedings for this street opening in order that the City may vest title at the earliest lawful day and proceed with the sewer promptly thereafter.

<i>Cost of Cleaning per basin</i>	<i>Number of Basins cleaned</i>	<i>Number of Basins examined</i>	<i>Cost of cleaning Sewers, per mile</i>	<i>Miles of Sewer Cleaned</i>	<i>Miles of Sewers examined</i>
1902 1901 1900 1899 1898	1902 1901 1900 1899 1898	1902 1901 1900 1899 1898	1902 1901 1900 1899 1898	1902 1901 1900 1899 1898	1902 1901 1900 1899 1898
\$ 1.79 \$ 4.60 \$ 4.46 \$ 4.35 \$ 4.75	14958 9241 8760 8596 6516	61816 40853 36073 27426 15576	\$ 108.84 \$ 173.60 \$ 141.74 No records \$ Do	106.71 58.04 64.84 40.04 24.97	296.70 145.23 51.94 No records do

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

FRANK J. HELMLE, *Superintendent.*

This Bureau has under its care twenty-three public buildings and five floating baths, of which a detailed list is given in the report of Superintendent Helmle herewith. In addition, it has charge of the construction of the addition to the Hall of Records, the two interior bath buildings mentioned and the six public comfort stations authorized. The aggregate value of this construction work is in excess of \$750,000.

The Bureau has also charge of the cleaning of the streets of Wallabout Market, and for that purpose employs a force of laborers, cleaners and drivers, with horses and carts. This matter is fully covered by the attached report of the Superintendent.

This Bureau is also the purchasing office of the entire Department, all the goods being bought through it for the other bureaus, save such as are obtained through contract at public letting. This has systematized the purchasing and has fixed the responsibility; it has worked well throughout the year. This Bureau also purchases such supplies as are needed for the maintenance and care of the public buildings in the borough under its charge, including coal.

The report of Mr. Helmle takes up in detail each of the buildings under his charge and the new construction work pending; it is commended to your careful reading and to all interested in this important branch of the borough service.

The care with which the buying of supplies and the ordering of repairs has been done will appear from the fact that out of 3,221 orders for merchandise and repairs, aggregating \$101,-

021.65, but eight vouchers, involving a total deduction of \$88.63, have been returned by the Finance Department, the deductions thus made amounting to barely eight one-hundredths of one per cent. of the value of the purchases.

An opportunity is offered in the purchases made in this borough to every responsible merchant to furnish goods to the City, while as far as possible preference is given to Brooklyn dealers and local mechanics. It has been the regular practice to receive competitive bids for supplies, even when not required by law; this has been done 323 times during the year, averaging rather more than once a day. None of these competitive offerings were legally necessary, but it was done solely for the purpose of throwing open the business of the borough as far as possible to every responsible dealer.

It is a feature of this report that it has attached to it a list not alone of all contractors with whom the Department has dealt, but also all of the merchants, mechanics and tradesmen through whom supplies or repairs have been ordered. I request examination of this latter list, especially that it may be seen from it that neither locality, political or personal consideration have entered into this part of the public work.

There is also included in the report of the Bookkeeper of the whole Department, Mr. William Chambers, attached hereto, a detailed list of the amount spent for every kind of supply used in all the bureaus. This is given that the public may clearly know, if they care to know, where and for what the money paid in taxes for this purpose is expended.

It is somewhat disappointing that local merchants have not responded more generally to invitations to bid; out of eighty-three cases where six invitations were sent to that number of merchants at the same time, but one answer was received in each case. I wish, as a part of this report, to request responsible dealers who desire to sell their wares to the City to file their names and addresses with the Superintendent of Public Buildings and Offices, and to respond as fully as possible to invitations to bid sent to them.

The advantages of obtaining competitive bids, even where not legally required, is evident from the statement of Superintendent Helmle, that estimates received for the same work, especially in matters of repairs, varied from 25 to 400 per cent.; for example, from \$160 to \$545, and \$18 to \$117 for the same work.

The instructions to the Bureau are to place no general, indefinite or vague orders, and to require clear, detailed specifications for repair work. It is the practice to forward daily, and as soon as possible after their receipt, all bills of merchants supplying goods, to the Finance Department for payment. At this date all bills received have been certified and transmitted to the Finance Department for settlement, and special requests have been sent to merchants to present their bills promptly in order that they may thus be paid.

Earnest efforts have been made throughout the year to bring all the public buildings to a good state of repair and to keep them thoroughly cleaned and in order. Every tenant and office head has been twice asked to suggest such repairs, changes or other work as will best fit the office used for his comfortable and efficient work, and the many suggestions received in response to this request have been carried out.

Examination of a portion of the structure of the Borough Hall at its west end, under the former Common Council Chamber, showed that the floor beams of the second story were deflected, and that the columns supporting these beams did not rest properly upon their foundations. Quarters were found in the Athenæum Building, on Atlantic avenue, for the Court of Sessions, which was occupying the old Common Council Chamber in the Borough Hall. A contract has been made with W. and T. Lamb for rebuilding, at a cost of \$16,625, the interior structure of the Borough Hall at this dangerous place, and the work is now progressing.

Orders were given to reset the boilers in the Borough Hall and to rebuild the defective brick walls around them on June 28 and July 30. The boilers were installed in 1876 and have

been in operation ever since. When the arches were taken off the walls were found ready to fall, the bars and grates of the iron boiler fronts had become loose and had fallen from place about six inches. Between the haunches and the arches in the centre and the arches in the outside walls the space was filled with dirt and loose stone, not bound together with bricks and mortar. It was necessary to shore up the walls and the large ceiling arches, take down the defective walls and arches, put in iron beams and columns and rebuild the brick walls. In doing this it was found that the space between the top of the arches and floors, about five feet, was also filled in with dirt and loose stone. The cost of this emergency work, which was wholly un contemplated when the repairs to the boilers were begun, was \$3,264.90, which expenditure was approved by the Board of Aldermen on submission of the full facts to them. Full details of this work are given in the report of Mr. Helmle herewith.

In the Kings County Jail it was found that the steam heating pipes were laid in the ground, under asphalt, so that they rusted out in a few years, requiring the taking up and relaying of the asphalt as often as the pipes needed repairing. A new system of pipes has been constructed in brick ducts covered with removable slabs, so that breaks or leakages can now be immediately found and repaired without the expense hitherto necessary. In doing this the pipes have been well covered with asbestos and will last much longer than heretofore.

The present dome of the Court-house, erected in 1861, is made of sheet and cast-iron, painted white. It has seriously deteriorated from rust, and arrangements are making for replacing it, when the weather permits, with a copper dome of the best quality.

One of the important improvements under the charge of this Bureau is the enlargement and alteration of the Hall of Records, the contract price for which is \$398,700. The work is being done by Thomas Dwyer, of No. 160 Fifth avenue, Borough of Manhattan; excavation and placing of concrete for

the foundation is already proceeding. A full report upon this new structure, which will be one of the most important in the borough, is given by Mr. Helmle, herewith.

To what I have already stated concerning the two public bath buildings, I will only add here that the bath on Hicks street, near Degraw street, is built upon a lot 35.8 x 97.6 feet, and will contain two stories and a cellar, having a capacity of 56 showers and 8 bathrooms, toilet-rooms, etc. The Pitkin avenue bath will be a two and a half story building, occupying a plot 50 x 100 feet, with a total of 90 shower baths, six bathrooms, toilet-rooms, etc. The complete details of both these structures given in the report of Mr. Helmle, herewith.

The Underground Public Comfort Stations are being so constructed that little of them appears above ground. There will be a staircase leading downward, inclosed by a railing, and these stairs, with a rail and two ornamental lamp-posts, each surrounded by a small isle of safety, will be all seen from above.

Among the peculiar duties of the Bureau of Public Buildings is the erection of headstones for the graves of deceased veteran soldiers and sailors, in the cemeteries of Kings and Queens Counties, and the care of the plot in Greenwood, in which are interred the remains of the unidentified dead of the victims of the Brooklyn Theatre fire, December 5, 1876. Both of these are fully covered in the report of the Superintendent of Public Buildings and Offices, attached hereto.

I concur with the suggestion made by Mr. Helmle, that the works of art in this Bureau, belonging to the municipality, comprised chiefly of portraits of Mayors of the former City of Brooklyn, Judges and Surrogates, should be placed in the care of some institution devoted to the preservation of the historical records of Brooklyn. These works of art have been properly catalogued and are now under the watchful care of the Bureau of Public Buildings and Offices, but are not in places accessible to the public or to any student of our history. It would seem

to me proper, if you concur, that these paintings, etc., should be placed in the Museum of the Brooklyn Institute of Arts and Sciences. This museum is erected by the City, and is a place where, in a fireproof structure designed for the purpose, these works of art would not only be preserved as they should be, but would be accessible to every one in the borough.

BUREAU OF ENCUMBRANCES AND PERMITS.

Hon. OTTO KEMPNER, Assistant Commissioner of Public Works, and Acting Superintendent.

MR. CHARLES J. CASSIDY, Inspector in Charge.

In view of the criticisms that have from time to time been made of the operations of this Bureau, your attention is especially asked to the report of the Assistant Commissioner of Public Works, acting as Superintendent of Encumbrances and Permits, which is attached hereto.

From this it appears that during the entire year 1902 but 212 pieces of encumbrances of every kind were seized by the forces of this Bureau on the 1,100 or more miles of sidewalk in the Borough of Brooklyn. There has, therefore, been throughout the year one seizure of encumbrances of all kinds to rather more than five miles of sidewalks. Sidewalks are specified because the Bureau of Encumbrances and Permits has no authority whatever between curb and curb; in other words, upon the roadways of avenues and streets; its jurisdiction is limited to the sidewalks. This Bureau has frequently been alleged, during the year, to have made removals from the roadway of the streets, but has never done so.

The work of this bureau was taken up on the 1st of January, 1902, along the lines of activity then prevailing, but with this difference, that the laws were impartially and uniformly administered. It was found that the laws against encumbrances had been sustained by drastic decisions of the higher Appellate Courts, and these were enforced by a cogent opinion of the Corporation Counsel, who advised me that everything from building line to building line, not authorized by law, is an encumbrance which it was my duty to remove.

In the desire to avoid going to extremes, special written instructions were early given that, in contact with citizens, the Inspectors of this Bureau should be impartial, courteous and considerate. On March 6, 1902, the following written instructions on this subject were given to the Superintendent of this Bureau:

"It is of special importance * * * to be tactful and considerate, to avoid as far as possible all arbitrary and imperative methods. Your inspectors should be informed that every citizen is entitled to courtesy, and that in many cases where obstructions exist there is undoubtedly no deliberate intention of breaking the law, but merely conformity with a custom that has grown up so long, that it has created in many minds the force of a right. Citizens will obey the law when it is impartially enforced and when it is courteously done."

These orders were on June 4 renewed thus:

"My only comment in the matter is to renew the suggestion verbally made that where it proves necessary to take final measures, as in this case, every previous resource of courtesy and good will should be exhausted before final action is taken, and then every care should be used to avoid even the appearance, as far as possible, of arbitrary methods. Understanding that you have impressed upon the Inspectors in your Bureau, verbally, the importance of courtesy in all these matters, I beg to express my gratification of that fact and to say that consideration and courtesy, even under most trying circumstances, is a point on which you are instructed to insist. The citizen is entitled to kindly and right treatment, under any and all circumstances, and nothing less will be permitted or approved."

Throughout the year the earnest effort in this Bureau has been to do its work along the lines stated. Coincident with this has been the steady reduction of the force. In the early days of the year one of the Inspectors of Encumbrances resigned and his place was not filled. In early March two additional Inspectors were removed because their services were no longer necessary, and in the month of December three fur-

ther Inspectors were removed and the outside force of the Bureau reduced to four Inspectors with a horse and wagon and two laborers.

The borough is now divided into four inspection districts, as follows :

District No. 1.—Beginning at the foot of Broadway, both sides of East New York avenue, Gillen place, to Vermont avenue, to borough line, to Newtown Creek, to East river, to place of beginning.

District No. 2.—Beginning at the foot of Fulton street, both sides, to East New York avenue, to the line of Broadway; the territory line between Fulton street and Broadway.

District No. 3.—All the territory lying between Flatbush avenue and Fulton street, Flatbush avenue, at its intersection with Fulton street, being the point of beginning.

District No. 4.—All the territory lying south of Fulton street and Flatbush avenue.

The following instructions are given concerning the Inspectors in these districts :

“ That there may be no question of favoritism, an Inspector will be allotted to each district for one month, at the end of which time he will be transferred to another district for a similar period, but not in any regular order. These transfers will be made by the Assistant Commissioner of Public Works.”

No Inspector has power to make or order seizures of any kind. These are only made after both verbal and written notice to the obstructor, and then only upon written order signed by me. Recognizing the serious inconvenience to local merchants that would be caused by the abrupt removal of advertising and other matter placed sometimes temporarily, and always without purpose to offend, upon the sidewalks, this Bureau has been content to ask that so far as possible these be kept within the stoop line; where this has been done no further action of any kind has followed.

It is a pleasure to say that many merchants have, from the first, assisted cordially in the work above outlined, and the New York and New Jersey Telephone Company in early April

began and have since continued a definite course of co-operation with us. I shall be glad to give the names and addresses of merchants who have acted in cordial support of the policy of the Bureau willingly and without delay.

In many resident sections street washers were found projecting several inches above the sidewalks, constituting a source of danger to every passer; on request by the Bureau of Encumbrances to the owners or occupants of the adjoining premises, 3,124 of these have been by them removed. The Bureau has itself removed none.

Throughout the year there has been constant pressure from citizens to require the removal of alleged encumbrances of many kinds. The total number of complaints of all kinds received is 7,471. It is respectfully submitted that an aggregate number of seizures of 212 out of 7,471 complaints shows that the work of the Bureau has been administered conservatively and not upon drastic lines.

Approving fully the report of the Superintendent of Encumbrances attached, I concur with his statement that "it is only the man who wilfully and maliciously persists in disregarding the law by maintaining a flagrant obstruction who has any reason at present to complain of our activity."

OFFICE OF THE GENERAL BOOKKEEPER.

The full and clear report of Mr. William Chambers, General Bookkeeper for the office of the Borough President which is transmitted herewith, is worthy of careful attention. It has, under my special instructions, been so prepared as to give the fullest possible light on the financial details of the operation of your Department during the year. In it are stated by name all the contractors who have done work for the respective bureaus, the number of contracts made with each and the aggregate value thereof. The report also gives in separate detail for each Bureau the kind of supplies purchased for it and the aggregate cost of each. It shows how the purchase of

supplies and repairs throughout the year are distributed among the several public buildings and offices under the care of the Department, and it gives a full statement of the merchants, dealers, mechanics, etc., from whom goods have throughout the year been purchased.

The interesting fact appears from the recapitulation made in this financial report of the appropriations and expenditures for the year 1902, that after all known outstanding liabilities are deducted from the balances on hand, at this date there remains unexpended out of the annual appropriation for 1902 the total sum of \$10,011.82. Notwithstanding, therefore, the reduced appropriation for the purposes of the several bureaus and offices made by the Board of Estimate and Apportionment early in 1902 for that year, and in spite of the extraordinary volume of work done in these bureaus and offices which exceeds that of any previous year in the history of the borough, there has been saved and is ready for refund to the City the sum of \$10,011.82, as above stated, full details of which are given in Mr. Chambers' report. This has a further special interest from the fact that when toward the close of the year it was evident that by economies in administration a saving had been made, special instructions were given by me to the Superintendent of Public Buildings and Offices to put the public buildings under his care in the best of shape, and to utilize the existing appropriation fully, if need be, for that purpose. Similarly, also, instructions were given to the Superintendent of Sewers and the Chief Engineer of Highways to equip their respective bureaus with needed tools and apparatus, for which money had been saved throughout the year. This has been done, and these bureaus are to-day, all of them, equipped as never before. Such ordinary appliances as scales for weighing coal were lacking at the three Sewage Disposal Works at Coney Island. A modern platform scale has been installed at each and an ample supply of tools procured. Road making and repairing machinery, including two steam rollers and a stone crusher, were procured for the Bureau of Highways. The

work for the year 1903 will start on a basis as regards tools, supplies and other essential equipment for the work that has hitherto been unknown. Despite the fact, however, that an unusual expenditure has been deliberately made for this purpose, not contemplated when the appropriation for 1902 was made, there still remains unexpended the sum of \$10,011.82 as above.

Attention is further asked to the tabular statements of the cost of telephone service and of car fares presented herewith in comparison with previous records of these items in former years. The amount spent for these purposes (for telephone \$5,978.36, for car fares \$3,460), is so large as to warrant a careful statement of where the money goes. It will appear that on the basis of a business in 1902 largely increased over any previous four years combined, the excess for telephone service in 1902 over 1901 is but \$200.58 on a total of \$5,978.36, a difference of less than 5 per cent. for a greatly increased amount of work. In the matter of car fares the statement presented will show an outlay in two bureaus decreased over previous records; in the Bureau of Highways increased in much less proportion than the amount of work done by that Bureau and as regards the other offices reasonable in amount, but no comparison with previous records can be made because no former records exist. The full details of the report herewith on both these matters are respectfully commended to your consideration.

On August 1, 1902, general ordinance 427—the so-called Bay-window Ordinance—went into effect, providing that the Commissioners of Public Works and the Park Commissioners having jurisdiction should issue permits for the erection of bay-windows projecting beyond the building line, provided that, in the opinion of the said Commissioners, no injury would come to the public therefrom. This ordinance gave to the Commissioners of Public Works the option of allowing bay-window projection under certain restrictions to a distance of three feet beyond the building line, and a fee was to be charged

of from one to five dollars per square foot of area covered by said bay-window beyond the building line, the rate to be based upon the assessed valuation of the property. The City was also to be divided into districts, "throughout which, in each district, the rate per square foot shall be uniform, the maximum rate being charged where the assessed valuation per square foot is the greatest, and the minimum rate where the assessed valuation per square foot is the least, the intermediate rates being proportioned accordingly."

From before the date upon which the ordinance went into effect, a constant effort has been made in conjunction with the authorities in the other boroughs to get it into uniform operation, but the vagueness of the law in several respects has made it impracticable to do so. After careful study of the ordinance and some experience in its effects, certain amendments were suggested by me to its author to simplify it. These amendments and others, arising from experience, are now pending before the Board of Aldermen. Meanwhile, we have continued in this borough to charge the maximum fee in every case, in the hope that when the amendment should have been passed a refund would be made where an excess was proved to have been paid.

No permits have been given for bay-windows projecting more than one foot beyond the building line, save in one suburban case, where the so-called bay-window was really a small entrance to the building and was in the nature of a storm-door as well as bay-window.

In view of the difficulties attending the uniform operation of the law and the variance in the practice of the several boroughs concerning it, I have recently addressed to you a detailed communication giving all the facts and quoting the documents on the subject, with the request that same be placed before the Comptroller that he may bring his powerful influence to bear in the direction of having the law made simple and uniform throughout the city, as it is not now.

The difficulties in the way of districting the city, according

to the assessed valuation, are almost insuperable, and at present each borough is proceeding on independent lines and charging different rates.

I ask your influence in reducing this matter to uniformity, suggesting that the authority to issue these permits should be placed in the hands of the Borough President, and also suggesting that if it were so placed, the proper office for the prompt and easy administration of the ordinance is that of the Bureau of Buildings, through whose hands, in any case, the drawings required must pass, and which must take cognizance, in any case, of the actual construction of the bay-windows.

The City is paying rental for rooms in the Jefferson building (Topographical Bureau), in Temple Bar (Tenement House Department), and in the Athenæum (Court of Sessions), and elsewhere for public offices that should be concentrated in one building belonging to the City. The various departments that are already housed in the Municipal Building are crowded and their various branches separated, causing great inconvenience and a decided lack of efficiency in operation. The suggestion has been made that on land owned by the City adjoining the Municipal Building, a new Municipal Building should be constructed of ample size to provide room for the courts and other public departments now occupying quarters in private buildings and to permit the concentration of the departments now separated into contiguous quarters. I believe the adoption of this suggestion would be economical to the public from a financial standpoint and would lead to better work at less cost than now prevails. I hope that during the year 1903 this plan may be brought into practical effect.

In connection with the proposed new building, I beg to call your attention to the facts stated by the Superintendent of Sewers and the Chief Engineer of Highways concerning the condition of the public records in their two offices. Many of these records are invaluable and could not be replaced if lost. The photographs shown herein illustrate clearly to the eye their present condition, which cannot be called one of "safe-keep-



HERE ARE KEPT THE VALUABLE SEWER RECORDS OF BROOKLYN.



THE MAP ROOM—BUREAU OF HIGHWAYS.

ing." They are at the daily risk of serious injury or destruction by fire, or other causes. In connection with the new building I would earnestly recommend the construction of fire-proof rooms in which these records can be stored and used, pointing out that an underground vault would not be proper for the reason that these maps and records are in constant daily use, and should be kept where light and space are available in which to use them.

The work of the outside gangs in the Bureau of Highways and the Bureau of Sewers was stimulated during the past year by the offering of money prizes to each member of these gangs which should, throughout the quarter from July 1 to October 1, show the best record in work done. These prizes were contributed by yourself and myself personally, with the assistance of Chief Engineer Tillson, Superintendent Thatcher and Assistant Engineer E. J. Fort, and the competition among the various gangs to receive them was keen. The prizes were duly awarded during the month of November, after a careful report upon the competitive record made by committees in each Bureau, in selecting which the men had a voice, and to each member of the prize winning gangs was given a certificate of merit for faithful service rendered. Similar certificates were also given for faithful service to employees worthy thereof in other gangs, even though the gangs in which they worked did not obtain money prizes. I fully believe that the exceptional record made by the outside gangs in both the Bureau of Sewers and the Bureau of Highways is largely due to this encouragement.

The prizes awarded were from \$15 to \$18 each for the respective foremen of the winning gangs, and from \$3 to \$7.50 for each workman in these gangs. The certificates of merit read as follows:

"In accordance with the recommendation of the Chief Engineer of Highways (or Superintendent of Sewers) and the Commissioner of Public Works, you are hereby commended for faithful and meritorious performance of your duty as an

employee of The City of New York during the quarter ending October 31, 1902."

Each of these certificates was signed by yourself. It was understood in the two bureaus concerned that so far as practicable preference should be given to the men receiving these certificates by retaining them whenever a reduction of the force became necessary.

During the year 1902 a large number of important public improvements were stopped because their cost was more than one-half the assessed valuation of the abutting property, such, for example, as the proposed regulating, grading and paving of Coney Island avenue, from Park Circle southward. There are a great many similar cases. In all these instances citizens have petitioned to have the improvement made and are willing and anxious to pay for it, but have been prevented from gaining it because of the legal objection mentioned. One of the effects of the increased assessed valuations will be to permit progress with these improvements, and so give to the citizens in outlying sections of the borough the improvements for which they have petitioned and for which they are ready and willing to pay. This, in itself, is of material advantage, not only to the property immediately affected, but to the borough at large, and is an important gain that has been brought about through the changed methods of assessment.

I would respectfully recommend that a sufficient clerical and inspecting force be permanently assigned to the office of the Secretary of the Local Boards, in order that matters brought up for the attention of these Boards may be thoroughly investigated before they come before the respective Boards for action. In this way not only will much friction be avoided, but it is demonstrated by experience that a large proportion of the work desired will gladly be done by property-owners of their own motion, by private contract, when the subject is once brought to their attention. In this way not only is the time and labor of the Local Boards and their officers saved, but the detail work of the Bureau of Highways will be much reduced,

so that whatever expense is necessary for the force suggested will be fully made good in other directions. The added promptness also with which the work of this kind would be done would itself be a sufficient warrant for the establishment of the proposed force.

I wish to commend the work of the Supervisor of Complaints, Mr. James A. Rooney, in so caring for various complaints laid before him as to promptly satisfy in most cases the complainants and relieve this Department of much expensive detail work that would without his services have been necessary. I have been glad to place at his disposal several inspectors of the Bureau of Highways during the winter months for use in connection with sidewalks and other similar complaints.

In summing up the report of the Department's work for the year 1902, I recall with pleasure that our relations with the numerous contractors employed in this Department throughout the year have been agreeable and businesslike. These contractors have done their work on a business basis with business men and without obstructions and unnecessary restrictions or unlawful taxation. They have known that their work must be well done or it would not be accepted, and this will continue to be the rule of this office and of its several bureaus.

All of the assessment rolls for the assessment work completed to date have been made up, signed and transmitted to the Board of Assessors.

All petitions presented for assessable improvements have been reported upon and transmitted to the Secretary of the Local Boards for proper action.

In conclusion, it is respectfully submitted that the comparative degree of borough independence provided by the present Charter has, in Brooklyn, justified itself in the result of the year's work and has borne good fruit. I wish to commend, also, the present system of local improvement boards. It has been my pleasure to preside over many of their meetings during the past year, and the record of work done by them shows at once the conservatism, the activity and the efficiency of their

labors. They provide a forum of the most democratic character before which any citizen can come and where he is sure to receive a hearing, and the members of these Boards have, throughout the year, shown at their meetings a desire to keep in touch with the citizens of the borough, and to learn their wishes and do their will.

All of which is respectfully submitted.

WILLIAM C. REDFIELD,

Commissioner of Public Works.

CITY OF NEW YORK, BOROUGH OF BROOKLYN,
 OFFICE OF THE ASSISTANT COMMISSIONER OF
 PUBLIC WORKS—MUNICIPAL BUILDING,
 BOROUGH OF BROOKLYN, January 3, 1903. }

Hon. WILLIAM C. REDFIELD,
Commissioner of Public Works,
 Borough of Brooklyn:

DEAR SIR—I have the honor to transmit herewith a detailed statement of all contracts entered into in pursuance of public letting by the Borough President of Brooklyn for the several bureaus under the control of the Commissioner of Public Works during the year ending December 31, 1902.

The first bids for the past year were opened on the 28th day of February, and the work of executing contracts for the year began on or about the latter date. Counting from that period and excluding Sundays and holidays, this Department has had about 257 working days to the end of the year. During that space of time this office has been engaged in the preparation of 265 separate contracts, of which number 241 are actually registered, and 24 are still pending, but nearly completed. It will thus be seen that an average of one contract per day is the record for the working year.

The total estimated cost of contract work represented by said 265 contracts is \$4,243,342.84.

For the current year it may facilitate our contract letting if bids or estimates for the several bureaus could be opened at definite times each month. For instance, let bids for the Highway Bureau be opened regularly on the first and third Wednesdays of the month, and for the Sewer Bureau and the Bureau of Public Buildings and Offices on the second and fourth Wednesdays of each month. This arrangement would

serve to concentrate the attention of bidders and probably produce livelier competition and better results for the public. It would also have the effect of making the respective bureaus combine their wants, so as to enable us to advertise for improvements or supplies of a certain kind or class in larger quantities at one time than we have done during the last year. I believe that the contract work of the Department would be more systematized by this arrangement, and that it would result in other advantages.

Respectfully,

OTTO KEMPNER,
*Assistant Commissioner of Public Works,
Borough of Brooklyn.*

*List of Scaled Bids or Estimates Received by the President
of the Borough of Brooklyn for Year Ending December
31, 1902:*

ON FEBRUARY 28, 1902.

For a temporary sewer on the east side of Seventy-ninth street, from Seventh avenue to Fifth avenue.

Nine bids were received.

\$900 deposited as security on bids.

ON MARCH 10, 1902.

1. For furnishing and delivering 1,410 gross tons of White Ash anthracite coal to the Bureau of Public Buildings and Offices.

Four bids were received.

\$300 deposited as security on bids.

2. For furnishing and delivering 1,000 gross tons White Ash anthracite coal, pea size, to the several sewage disposal works in the Twenty-sixth and Thirty-first Wards.

Three bids were received.

\$350 deposited as security on bids.

3. For furnishing and delivering 6,400 barrels No. 1 Rockland, Glen Falls, Sing Sing or Shell lime to the several sewage disposal works in the Twenty-sixth and Thirty-first Wards.

Nine bids were received.

\$1,800 deposited as security on bids.

ON MARCH 21, 1902.

1. For furnishing and delivering forage to the Bureau of Highways.
Three bids were received.
\$75 deposited as security on bids.
2. For furnishing and delivering forage to the Bureau of Sewers.
Three bids were received.
\$75 deposited as security on bids.

ON APRIL 2, 1902.

1. For repairing and reconstructing main sewer in Hegeman avenue, between Hinsdale street and Williams avenue.
Six bids were received.
\$750 deposited as security on bids.
2. For installing one sixty-five horse-power boiler at Station No. 2, Thirty-first Ward Sewage Disposal Works.
Three bids were received.
\$180 deposited as security on bids.

ON APRIL 16, 1902.

For dredging Gowanus canal from its head to Third street.
One bid received.
\$150 deposited as security on bid.

ON APRIL 23, 1902.

1. For building and placing complete a 48-inch wooden barrel outlet sewer, with all appurtenances, at the foot of Sackett street, East river.
Two bids were received.
\$175 deposited as security on bids.
2. For repairing and fitting out five free floating baths.
Four bids were received.
\$300 deposited as security on bids.

ON APRIL 30, 1902.

For fencing vacant lots on the northwest side of New Lots road, between Schenck avenue and Barbey street.
Two bids were received.
\$10.50 deposited as security on bids.

ON MAY 7, 1902.

1. For furnishing and delivering 1,920 cubic yards of broken trap rock and 1,075 cubic yards trap rock screenings to the Bureau of Highways.
Three bids were received.
\$225 deposited as security on bids.

2. For fencing vacant lots on the north side of Lexington avenue, between Summer avenue and Lewis avenue, etc.

Four bids were received.

\$193.75 deposited as security on bids.

ON MAY 14, 1902.

1. For constructing 14 sewer basins in Albermarle road at East Eleventh street, etc.

Six bids were received.

\$300 received as security on bids.

2. For constructing sewer in East Nineteenth street, between high-water mark and bulkhead line.

Two bids were received.

\$300 deposited as security on bids.

3. For constructing sewer in Degraw street, between Third and Fourth avenues.

Five bids were received.

\$200 deposited as security on bids.

4. For grading and paving Pitkin avenue, from Snediker avenue to Linwood street, with granite blocks on a sand foundation.

Thirteen bids were received.

\$16,250 deposited as security on bids.

5. For repaving Rockwell place, from DeKalb avenue to Lafayette avenue, with granite blocks on a concrete foundation.

Six bids were received.

\$960 deposited as security on bids.

6. For repaving Degraw street, from Van Brunt to Hicks streets, also Tiffany place, from Degraw street to Harrison street, with granite blocks on a concrete foundation.

Six bids were received.

\$2,130 deposited as security on bids.

7. For repaving Forty-second street, from First to Third avenues, with granite on a concrete foundation.

Eight bids were received.

\$2,400 deposited as security on bids.

8. For repaving Court street, from Bryant street to Hamilton avenue, with granite on a concrete foundation.

Five bids were received.

\$1,885 deposited as security on bids.

9. For repaving Third avenue, from Twenty-sixth street to Thirty-eighth street, with granite on a concrete foundation.

Eight bids were received.

\$3,330 deposited as security on bids.

10. For repaving Richardson street, from Graham avenue to Leonard street, with granite on a concrete foundation.

Five bids were received.

\$1,075 deposited as security on bids.

11. For repaving Morgan avenue, from Johnson avenue to Flushing avenue, with granite on concrete foundation.

Five bids were received.

\$1,075 deposited as security on bids.

ON MAY 21, 1902.

1. For grading lots on the south side of Forty-first street, between Fourth and Fifth avenues.

Three bids were received.

\$52.50 deposited as security on bids.

2. For grading lots on the north side of Forty-seventh street, between Fifth and Sixth avenues.

Three bids were received.

\$67.50 deposited as security on bids.

3. For grading lots on the south side of Bleecker street, between Irving avenue and Wyckoff avenue.

Four bids were received.

\$20 deposited as security on bids.

4. For constructing sewer in Hart street, between Irving and Wyckoff avenues.

Four bids were received.

\$180 deposited as security on bids.

5. For constructing sewer in Fulton street, between Williams place and Alabama avenue.

Two bids were received.

\$60 deposited as security on bids.

6. For constructing sewer in Fifty-eighth street, between Seventh and Eighth avenues.

Eight bids were received.

\$280 deposited as security on bids.

7. For constructing sewer in Forty-ninth street, between Sixth and Seventh avenues.

Seven bids were received.

\$245 deposited as security on bids.

8. For constructing a sewer basin at the west corner of Eighty-fourth street and Twenty-first avenue.

Seven bids were received.

\$28 deposited as security on bids.

9. For constructing a sewer basin at the south corner of Eighty-sixth street and Seventeenth avenue.

Six bids were received.

\$24 deposited as security on bids.

10. For constructing a sewer basin at the east corner of Seventeenth and Benson avenues.

Seven bids were received.

\$28 deposited as security on bids.

ON MAY 28, 1902.

1. For repaving with asphalt on concrete foundation DeKalb avenue, from Fulton street to Clinton avenue.

Seven bids were received.

\$2,100 deposited as security on bids.

2. For repaving with asphalt on concrete foundation Evergreen avenue, from Ralph street to Grove street.

Six bids were received.

\$1,200 deposited as security on bids.

3. For repaving with asphalt on concrete foundation Java street, from Oakland street to Franklin street.

Seven bids were received.

\$2,100 deposited as security on bids.

4. For repaving with asphalt on concrete foundation Maujer street, from Leonard street to Bushwick avenue.

Four bids were received.

\$2,000 deposited as security on bids.

5. For repaving with asphalt on present pavement Nutria alley, from Adams street to 100 feet east.

Two bids were received.

\$20 deposited as security on bids.

6. For repaving with asphalt on concrete foundation Decatur street, from Howard avenue to Bushwick avenue.

Seven bids were received.

\$3,850 deposited as security on bids.

7. For repaving with asphalt on concrete foundation Hamburg avenue, from Putnam avenue to Cornelia street, etc.

Five bids were received.

\$500 deposited as security on bids.

8. For repaving with asphalt on concrete foundation Patchen avenue, from Macon street to Decatur street.

Five bids were received.

\$500 deposited as security on bids.

9. For repaving with asphalt on concrete foundation Saratoga avenue, from Bainbridge street to Chauncey street.

Five bids were received.

\$750 deposited as security on bids.

10. For repaving with asphalt on concrete foundation McDougall street, from Rockaway avenue to Broadway.

Five bids were received.

\$1,250 deposited as security on bids.

11. For repaving with asphalt on concrete foundation Pacific street, from Columbia street to Court street.

Four bids were received.

\$1,200 deposited as security on bids.

12. For repaving with asphalt on concrete foundation Harman street, from Myrtle avenue to Irving avenue.

Six bids were received.

\$1,200 deposited as security on bids.

13. For repaving with asphalt on concrete foundation Suydam street, from Knickerbocker avenue to Irving avenue.

Six bids were received.

\$1,200 deposited as security on bids.

14. For repaving with asphalt on concrete foundation Osborne street, from East New York avenue to Sutter avenue.

Five bids were received.

\$1,500 deposited as security on bids.

15. For repaving with asphalt on concrete foundation Kosciusko street, from Lewis avenue to Throop avenue.

Seven bids were received.

\$2,100 deposited as security on bids.

16. For repaving with asphalt on concrete foundation Floyd street, from Nostrand avenue to Throop avenue.

Eight bids were received.

\$3,600 deposited as security on bids.

17. For repaving with asphalt on concrete foundation Hopkins street, from Nostrand avenue to Throop avenue.

Seven bids were received.

\$3,150 deposited as security on bids.

18. For repaving with asphalt on concrete foundation Wilson street, from Bedford avenue to Lee avenue.

Seven bids were received.

\$750 deposited as security on bids.

19. For repaving with asphalt on present pavement and concrete foundation Lorimer street, between Nassau avenue and Noble street, etc.

Seven bids were received.

\$2,450 deposited as security on bids.

20. For grading and paving with asphalt on concrete Third avenue, from Sixtieth street to the Shore road.

Seven bids were received.

\$16,200 deposited as security on bids.

ON JUNE 4, 1902.

1. For constructing a 30-inch cast-iron pipe storm sewer at Caisson No. 2, Coney Island.

Two bids were received.

\$120 deposited as security on bids.

2. For constructing sewer in North Eighth street, between Union avenue and Havemeyer street.

Five bids were received.

\$200 deposited as security on bids.

3. For constructing sewer in Coles street, between Henry street and Hamilton avenue.

Three bids were received.

\$90 deposited as security on bids.

4. For constructing sewer in Albany avenue, between Degraw street and Eastern parkway.

Three bids were received.

\$75 deposited as security on bids.

5. Constructing sewer in North Tenth street, between Roebling street and Union avenue.

Five bids were received.

\$100 deposited as security on bids.

6. Constructing sewer in Varick avenue, between Thames street and Johnson avenue.

Six bids were received.

\$480 deposited as security on bids.

ON JUNE 11, 1902.

1. Furnishing and delivering 2,230 cubic yards of broken trap rock; 825 cubic yards of trap-rock screenings; 650 cubic yards of broken limestone; 450 cubic yards of limestone screenings.

Two bids were received.

\$200 deposited as security on bids.

2. Furnishing and delivering 4,400 cubic yards of sand to the Bureau of Highways.

Nine bids were received.

\$450 deposited as security on bids.

ON JUNE 18, 1902.

1. For repaving with granite on concrete foundation Garden street, from Flushing avenue to Bushwick avenue.

Eight bids were received.

\$1,200 deposited as security on bids.

2. For repaving with granite on concrete foundation Amity street, between Columbia street and East river.

Six bids were received.

\$600 deposited as security on bids.

3. For repaving with granite on concrete foundation Hudson avenue, from Sands street to East river.

Seven bids were received.

\$2,450 deposited as security on bids.

4. For repaving with granite on concrete foundation Prospect avenue, between Fourth avenue and Seventh avenue.

Eight bids were received.

\$4,800 deposited as security on bids.

5. For repaving with granite on concrete foundation Hoyt street, from Union street to Atlantic avenue.

Six bids were received.

\$2,100 deposited as security on bids.

6. For repaving with granite on concrete foundation Manhattan avenue, from Grand street to Meeker avenue.

Eight bids were received.

\$4,000 deposited as security on bids.

7. For repaving with granite on concrete foundation Third avenue, from Atlantic avenue to Union street.

Five bids were received.

\$2,250 deposited as security on bids.

8. For repaving with granite on sand foundation Melrose street, from Hamburg avenue to Flushing avenue.

Eleven bids were received.

\$2,200 deposited as security on bids.

9. For regulating and grading Seventy-second street, from Sixth avenue to Fort Hamilton avenue.

Four bids were received.

\$600 deposited as security on bids.

10. For regulating and grading Fifty-fourth street, from Seventh avenue to Fort Hamilton avenue.

Six bids were received.

\$5,000 deposited as security on bids.

ON JULY 2, 1902.

1. For furnishing and delivering janitors' supplies to various public buildings in the Borough of Brooklyn.

Four bids were received.

\$350 deposited as security on bids.

2. For repaving with asphalt block pavement on concrete Twenty-second street, from Third avenue to Sixth avenue.

Four bids were received.

\$1,400 deposited as security on bids.

3. For repaving with asphalt block pavement on a concrete foundation Rush street, from Kent avenue to Division avenue.

Four bids were received.

\$500 deposited as security on bids.

4. For repaving with asphalt block pavement on a concrete foundation Maujer street, from Florence street to Morgan avenue.

Four bids were received.

\$800 deposited as security on bids.

5. For repaving with asphalt on concrete Herkimer street, from Nostrand avenue to Albany avenue.

Seven bids were received.

\$3,500 deposited as security on bids.

6. For repaving with asphalt on concrete Lefferts place, from St. James' place to Franklin avenue.

Seven bids were received.

\$2,800 deposited as security on bids.

7. For repaving with asphalt on concrete Third avenue, from Atlantic avenue to Flatbush avenue.

Five bids were received.

\$375 deposited as security on bids.

8. For repaving with asphalt on concrete Wolcott street, from Conover street to Richards street.

Six bids were received.

\$900 deposited as security on bids.

9. For repaving with asphalt on concrete Howard avenue, from Broadway to Madison street.

Five bids were received.

\$500 deposited as security on bids.

10. For repaving with asphalt on concrete Monroe street, from Classon avenue to Franklin avenue.

Seven bids were received.

\$2,100 deposited as security on bids.

11. For repaving with asphalt on concrete Fourth avenue, from Fortieth street to Sixtieth street.

Seven bids were received.

\$8,750 deposited as security on bids.

12. For repaving with asphalt on concrete Nelson street, from Smith street to Columbia street.

Seven bids were received.

\$2,100 deposited as security on bids.

13. For repaving with asphalt on concrete Seigel street, from Broadway to Bushwick avenue.

Seven bids were received.

\$2,100 deposited as security on bids.

14. For repaving with asphalt on concrete Marcy avenue, from Macon street to Fulton street.

Six bids were received.

\$360 deposited as security on bids.

15. For repaving with asphalt on concrete Hart street, from Broadway to Central avenue.

Five bids were received.

\$1,250 deposited as security on bids.

16. For repaving with asphalt on concrete Willoughby avenue, from Grand avenue to Bedford avenue.

Eight bids were received.

\$2,400 deposited as security on bids.

17. For repaving with asphalt on concrete New York avenue, from Park place to Eastern parkway.

Six bids were received.

\$900 deposited as security on bids.

18. For repaving with asphalt on concrete Nostrand avenue, from Flushing avenue to Willoughby avenue.

Six bids were received.

\$1,200 deposited as security on bids.

19. For repaving with asphalt on concrete Pacific street, from Albany avenue to Schenectady avenue.

Five bids were received.

\$1,000 deposited as security on bids.

ON JULY 11, 1902.

1. For paving with asphalt on concrete Glenmore avenue, from Stone avenue to Rockaway avenue.

Six bids were received.

\$900 deposited as security on bids.

2. For paving with asphalt on concrete Dean street, from Sackman street to Rockaway avenue.

Six bids were received.

\$1,500 deposited as security on bids.

3. For paving with asphalt on concrete Osborne street, from Sutter avenue to Blake avenue.

Six bids were received.

\$600 deposited as security on bids.

4. For paving with asphalt on concrete Ninety-ninth street, from Third avenue to Fort Hamilton avenue.

Five bids were received.

\$1,000 deposited as security on bids.

5. For paving with granite on sand foundation Meserole street, from Waterbury street to Morgan avenue.

Eleven bids were received.

\$4,400 deposited as security on bids.

6. For paving with macadam pavement on Mermaid avenue, from West Fifteenth street to West Nineteenth street.

Six bids were received.

\$750 deposited as security on bids.

7. For curbing and guttering on Sterling place, from Troy avenue to Schenectady avenue.

Four bids were received.

\$120 deposited as security on bids.

8. For grading, etc., on Butler place, from Plaza street to Sterling place.

Six bids were received.

\$1,200 deposited as security on bids.

9. For repaving with Medina sandstone pavement on concrete High street, from Jay street to Bridge street.

Nine bids were received.

\$900 deposited as security on bids.

10. For repaving with Medina sandstone pavement on concrete South Third street, from Kent avenue to Wythe avenue.

Nine bids were received.

\$900 deposited as security on bids.

ON JULY 23, 1902.

1. For building complete an 18-inch wooden trunk sewer at the foot of Fifteenth avenue, Borough of Brooklyn.

Three bids were received.

\$180 deposited as security on bids.

2. For furnishing and delivering rubber goods to the Bureau of Sewers, Borough of Brooklyn.

Seven bids were received.

\$350 deposited as security on bids.

3. Repaving with asphalt on concrete Congress street, from Court street to Columbia street.

Five bids were received.

\$1,250 deposited as security on bids.

4. Repaving with asphalt on concrete Chauncey street, from Reid avenue to Fulton street.

Five bids were received.

\$1,500 deposited as security on bids.

5. Repaving with asphalt on concrete Conselyea street, from Union avenue to Humboldt street.

Six bids were received.

\$1,800 deposited as security on bids.

6. Repaving with asphalt on concrete Cranberry street, from Fulton street to Columbia Heights.

Five bids were received.

\$500 deposited as security on bids.

7. Repaving with asphalt on concrete Aberdeen street, from Broadway to Bushwick avenue.

Five bids were received.

\$500 deposited as security on bids.

8. Repaving with asphalt on concrete Baltic street, from Fifth avenue to Clinton street.

Four bids were received.

\$3,000 deposited as security on bids.

9. Repaving with asphalt on concrete Keap street, from Broadway to Grand street.

Six bids were received.

\$1,200 deposited as security on bids.

10. Repaving with asphalt on concrete Twenty-fourth street, from Third to Fourth avenues.

Six bids were received.

\$600 deposited as security on bids.

11. Repaving with asphalt on concrete Willoughby avenue, from Washington Park to Clinton avenue.

Five bids were received.

\$750 deposited as security on bids.

12. Repaving with asphalt on concrete Fourteenth street, from Third avenue to Fourth avenue.

Five bids were received.

\$500 deposited as security on bids.

13. Repaving with asphalt on concrete Middagh street, from Henry street to Columbia Heights.

Four bids were received.

\$400 deposited as security on bids.

14. Repaving with asphalt on concrete Gates avenue, from Lewis avenue to Ralph avenue.

Five bids were received.

\$1,750 deposited as security on bids.

15. Repaving with asphalt on concrete Pacific street, from Court street to Bond street.

Five bids were received.

\$1,500 deposited as security on bids.

16. Repaving with asphalt on concrete Madison street, from Bedford avenue to Nostrand avenue, and from Throop avenue to Sumner avenue.

Five bids were received.

\$1,250 deposited as security on bids.

17. Repaving with asphalt on concrete Eighth avenue, from Eighth street to Sixteenth street, and Thirteenth street, from Eighth avenue to Prospect Park, West.

Five bids were received.

\$2,500 deposited as security on bids.

18. Repaving with asphalt on concrete Hoyt street, from Union street to Carroll street.

Four bids were received.

\$200 deposited as security on bids.

19. Repaving with asphalt on present pavement Clermont avenue, from Atlantic avenue to Flushing avenue.

Six bids were received.

\$4,500 deposited as security on bids.

20. Repaving with asphalt on concrete Reid avenue, from Broadway to Madison street.

Five bids were received.

\$1,250 deposited as security on bids.

21. For grading and paving with macadam pavement on Seventy-first street, from Third avenue to the Shore road.

Seven bids were received

\$3,500 deposited as security on bids.

22. Repaving with asphalt on concrete South Third street, from Wythe avenue to Union avenue.

Six bids were received.

\$3,600 deposited as security on bids.

23. Grading and macadamizing Clarkson street, from New York avenue to Troy avenue.

Six bids were received.

\$1,800 deposited as security on bids.

ON JULY 30, 1902.

1. Fencing vacant lots on various streets in the Borough of Brooklyn.

Two bids were received.

\$100 deposited as security on bids.

2. Constructing cement concrete sidewalks on various streets in the Borough of Brooklyn.

Two bids were received.

\$40 deposited as security on bids.

3. Constructing sewer-basin at Barbey street and Pitkin avenue.

Four bids were received.

\$16 deposited as security on bids.

4. Constructing sewer at the east corner of Nineteenth avenue and Bath avenue.

Four bids were received.

\$14 deposited as security on bids.

5. Constructing sewer basin at the north corner of Bay Twenty-sixth street and Bath avenue.

Four bids were received.

\$14 deposited as security on bids.

6. Constructing sewer-basins at the southwest corner of Beverly road and East Eleventh street, etc.

Four bids were received.

\$46 deposited as security on bids.

ON AUGUST 6, 1902.

1. Flagging sidewalks in various places and on various streets in the Borough of Brooklyn.

Three bids were received.

\$300 deposited as security on bids.

2. Flagging sidewalks in various places and on various streets in the Borough of Brooklyn.

Three bids were received.

\$300 deposited as security on bids.

3. Flagging sidewalks in various places and on various streets in the Borough of Brooklyn.

Three bids were received.

\$180 deposited as security on bids.

4. Repairing and maintaining asphalt pavements on various streets in the Borough of Brooklyn, where original guarantees on maintenance have expired.

Two bids were received.

\$300 deposited as security on bids.

5. Grading lots on the south side of Thirty-seventh street, between Fourth and Fifth avenues.

Seven bids were received.

\$105 deposited as security on bids.

6. Grading lots on south side of Eleventh street, between Eighth avenue and Prospect Park, West.

Four bids were received.

\$40 deposited as security on bids.

7. Grading lots on the north side of Seventeenth street, between Eighth avenue and Prospect Park, West.

Four bids were received.

\$100 deposited as security on bids.

8. Grading lots on the south side of Sterling place, between Vanderbilt avenue and Butler place.

Three bids were received.

\$90 deposited as security on bids.

9. Grading lots on the east side of Fifth avenue, between Forty-eighth and Forty-ninth streets.

Five bids were received.

\$277.50 deposited as security on bids.

ON AUGUST 13, 1902.

1. Constructing a bridge across Garrettson's Creek at Avenue U.

Three bids were received.

\$750 deposited as security on bids.

2. For 4,000 enamelled signs.

Three bids were received.

\$150 deposited as security on bids.

3. For 1,000 illuminated street signs.

One bid was received.

\$150 deposited as security on same.

4. One thousand seven hundred cubic yards of broken limestone, 525 cubic yards of limestone screenings and 300 cubic yards of trap-rock screenings.

One bid was received.

\$50 deposited as security on same.

5. For sewer in Sixth avenue, between Forty-ninth and Fiftieth streets.

Five bids were received.

\$90 deposited as security on bids.

6. For sewer in Fourth avenue (both sides), between Ninety-ninth and One Hundred and First streets, etc.

Four bids were received.

\$260 deposited as security on bids.

7. For sewer in Eightieth street, between Fourth and Fifth avenues.

Five bids were received.

\$200 deposited as security on bids.

8. Grading, etc., on Buffalo avenue, between St. Mark's avenue and Eastern parkway.

Seven bids were received.

\$700 deposited as security on bids.

9. Grading, etc., on Kingston avenue, between Douglass street and Eastern parkway.

Six bids were received.

\$300 deposited as security on bids.

10. Repaving with asphalt on concrete Albany avenue, from Eastern parkway to Lincoln road.

Three bids were received.

\$1,350 deposited as security on bids.

11. Repaving with asphalt on concrete Covert street, from Broadway to Evergreen avenue.

Three bids were received.

\$600 deposited as security on bids.

12. Repaving with asphalt on concrete Ellery street, from Nostrand avenue to Marcy avenue.

Three bids were received.

\$450 deposited as security on bids.

13. Repaving with asphalt on concrete Guernsey street, from Calyer street to Meserole avenue.

Five bids were received.

\$250 deposited as security on bids.

14. Repaving with asphalt on concrete Halsey street, from a point 300 feet east of Nostrand avenue to Sumner avenue.

Three bids were received.

\$900 deposited as security on bids.

15. Repaving with asphalt on concrete Hall street, from Flushing avenue to Park avenue.

Three bids were received.

\$300 deposited as security on bids.

16. Repaving with asphalt on concrete Middleton street, from Lee avenue to Wallabout street, and from Harrison avenue to Throop avenue.

Five bids were received.

\$750 deposited as security on bids.

17. Repaving with asphalt on concrete Olive street, from Grand street to Powers street, and from Devoe street to Metropolitan avenue.

Five bids were received.

\$250 deposited as security on bids.

18. Repaving with asphalt on concrete Prospect Park, West, from Fifteenth street to Nineteenth street.

Three bids were received.

\$600 deposited as security on bids.

19. Repaving with asphalt on concrete Poplar street, from Hicks street to Henry street.

Four bids were received.

\$200 deposited as security on bids.

20. Repaving with asphalt on concrete Palmetto street, from Evergreen avenue to Central avenue.

Three bids were received.

\$300 deposited as security on bids.

21. Repaving with asphalt on concrete Putnam avenue, from Nostrand avenue to 653 feet east.

Three bids were received.

\$3,000 deposited as security on bids.

22. Repaving with asphalt on concrete Patchen avenue, from Hancock street to Macon street, and from Decatur street to Fulton street.

Three bids were received.

\$750 deposited as security on bids.

23. Repaving with asphalt on concrete Thames street, from Morgan avenue to Knickerbocker avenue, and Vandervoort place, from Thames street to Flushing avenue.

Five bids were received.

\$500 deposited as security on bids.

24. Repaving with asphalt on concrete Second avenue, from Fifty-eighth to Fifty-ninth street.

Three bids were received.

\$75 deposited as security on bids.

25. Repaving with asphalt on concrete Sutton street, from Nassau avenue to Driggs avenue.

Five bids were received.

\$500 deposited as security on bids.

26. Grading, etc., on Fifty-seventh street, from Seventh avenue to Eighth avenue.

Six bids were received.

\$600 deposited as security on bids.

27. Repaving with asphalt on concrete Eighth avenue, from Fourth street to Eighth street.

Three bids were received.

\$600 deposited as security on bids.

28. Grading and paving East Nineteenth street, from Tennis court to Beverly road, with asphalt on concrete.

Three bids were received.

\$900 deposited as security on bids.

29. Repaving with granite blocks on sand Avenue U, from East Seventeenth to East Nineteenth street.

Five bids were received.

\$250 deposited as security on bids.

30. Repaving with granite on concrete Van Dyke street, from Van Brunt street to Richards street.

Six bids were received.

\$900 deposited as security on bids.

31. Repaving with granite blocks on concrete Flushing avenue, from Navy street to Washington avenue.

Four bids were received.

\$1,800 deposited as security on bids.

32. Repaving with asphalt on concrete Skillman street, from Lafayette avenue to DeKalb avenue.

Three bids were received.

\$150 deposited as security on bids.

ON AUGUST 27, 1902.

1. For constructing a sewer in Denton place, between First street and Carroll street.

Four bids were received.

\$120 deposited as security on bids.

2. For constructing sewer-basin at the southeast corner of Devoe and Judge streets.

Two bids were received.

\$7 deposited as security on bids.

4. For furnishing and erecting headstones, etc.

One bid received.

\$25 deposited on same.

5. For constructing sewers in Avenue G, from Coney Island avenue to Flatbush avenue.

Three bids were received.

\$19,950 deposited as security on bids.

6. For constructing sewer in Bedford avenue between Montgomery street and Flatbush avenue.

Nine bids were received.

\$33,750 deposited as security on bids.

7. For constructing sewer in Eighty-ninth street, between Fourth and Fifth avenues.

Three bids were received.

\$105 deposited as security on bids.

8. For constructing sewer in Mermaid avenue, between West Fifteenth street and Stillwell place.

Three bids were received.

\$105 deposited as security on bids.

ON SEPTEMBER 3, 1902.

1. Grading, curbing and guttering Seventy-third street, from Sixth avenue to Fort Hamilton avenue.

Six bids were received.

\$900 deposited as security on bids.

2. Paving with asphalt on concrete foundation Woodruff avenue, from Parade place to Flatbush avenue.

Three bids were received.

\$1,050 deposited as security on bids.

3. Repaving with asphalt on concrete Poplar street, from Hicks street to Columbia Heights.

Three bids were received.

\$150 deposited as security on bids.

4. Repaving with asphalt on concrete Wilson street, from Lee avenue to Division avenue.

Three bids were received.

\$225 deposited as security on bids.

5. Paving, curbing and laying concrete foundation on State street, from Hicks street to Henry street.

Four bids were received.

\$100 deposited as security on bids.

6. Repaving with asphalt on concrete Park place, from Washington avenue to Vanderbilt avenue.

Three bids were received.

\$750 deposited as security on bids.

7. Repaving with asphalt on concrete Prospect place, from Franklin avenue to Nostrand avenue.

Three bids were received.

\$750 deposited as security on bids.

8. Paving with asphalt on concrete Seventh avenue, from Forty-first to Forty-third street.

Three bids were received.

\$450 deposited as security on bids.

9. Paving with granite on concrete, with tar and gravel joints, between the tracks and rails of the Brooklyn Rapid Transit Company on Flatbush avenue, from Malbone street to Church avenue.

Five bids were received.

\$1,250 deposited as security on bids.

ON SEPTEMBER 10, 1902.

1. For two six-inch centrifugal sludge pumping plants at Caissons Nos. 2 and 3, Coney Island.

Three bids were received.

\$221.20 deposited as security on bids.

ON SEPTEMBER 17, 1902.

1. For constructing sewer crossings under Atlantic Avenue Improvement Subway at Howard avenue, Saratoga avenue, Rockaway avenue, Eastern parkway extension and Hopkinson avenue.

Two bids were received.

\$1,800 deposited as security on bids.

2. For constructing sewers in Sixtieth street, between Fourteenth and Nineteenth avenues, and in Nineteenth avenue, between Fifty-seventh and Sixtieth streets.

Four bids were received.

\$30,000 deposited as security on bids.

ON SEPTEMBER 24, 1902.

1. For furnishing all the labor and materials required in making changes and additions, extensions, alterations and improvements to the Kings County Hall of Records, etc.

Five bids were received.

\$25,000 deposited as security on bids.

2. For constructing a sewer in Sixty-sixth street, between Third avenue and Fourth avenue.

Two bids were received.

\$100 deposited as security on bids.

3. For constructing a sewer in Fort Hamilton avenue, between Sixty-fifth and Sixty-sixth streets, etc.

Two bids were received.

\$250 deposited as security on bids.

4. For constructing a sewer in Third avenue, between Seventy-ninth and Eightieth streets.

Two bids were received.

\$50 deposited as security on bids.

5. For constructing cement concrete sidewalks in various places and on various streets.

One bid was received.

\$50 deposited as security on same.

6. For constructing cement concrete sidewalks in various places and on various streets.

One bid was received.

\$100 deposited as security on same.

7. For constructing cement concrete sidewalks in various places and on various streets.

Three bids were received.

\$150 deposited as security on bids.

8. For flagging sidewalks in various places and on various streets in the Borough of Brooklyn.

Two bids were received.

\$100 deposited as security on bids.

9. For flagging sidewalks in various places and on various streets in the Borough of Brooklyn.

Three bids were received.

\$300 deposited as security on bids.

ON SEPTEMBER 26, 1902.

1. For fencing vacant lots on various places and on various streets in the Borough of Brooklyn.

Three bids were received.

\$150 deposited as security on bids.

ON OCTOBER 1, 1902.

1. For constructing cement concrete sidewalks in various places and on various streets.

Two bids were received.

\$100 deposited as security on bids.

2. For constructing a sewer in Ridgewood avenue, between Euclid avenue and Norwood avenue.

Three bids were received.

\$330 deposited as security on bids.

3. Repaving with asphalt on concrete Ten Eyck street, from Bushwick avenue to Waterbury street.

Two bids were received.

\$200 deposited as security on bids.

4. Regrading and repaving with granite on sand Varick avenue, from Metropolitan avenue to Flushing avenue.

Five bids were received.

\$2,500 deposited as security on bids.

5. Repaving with asphalt on concrete Nostrand avenue, from Macon street to Prospect place.

Three bids were received.

\$900 deposited as security on bids.

6. Repaving with asphalt on concrete Bergen street, from Bedford avenue to Kingston avenue.

Three bids were received.

\$900 deposited as security on bids.

7. Regulating and grading on Sixty-first street, from Fourth to Fifth avenue.

Eight bids were received.

\$1,200 deposited as security on bids.

8. Grading, curbing and guttering on Rutland road, from Kingston avenue to Albany avenue.

Five bids were received.

\$1,000 deposited as security on bids.

9. Grading, curbing and laying sidewalks on Hinsdale street, from Atlantic avenue to Sutter avenue.

Six bids were received.

\$1,255 deposited as security on bids.

10. Grading, curbing and laying sidewalks on Glen street, from Railroad avenue to Euclid avenue.

Five bids were received.

\$500 deposited as security on bids.

ON OCTOBER 15, 1902.

1. For furnishing and delivering 3,000 linear feet of bluestone curbstone to the Wallabout Yard, Borough of Brooklyn.

Four bids were received.

\$120 deposited as security on bids.

ON OCTOBER 22, 1902.

1. For furnishing and delivering 1,200 cubic yards of broken trap rock and 800 cubic yards of trap-rock screenings.

Five bids were received.

\$275 deposited as security on bids.

ON OCTOBER 29, 1902.

1. Grading and paving with macadam on Albany avenue, from Lincoln road to Clarkson street.

Six bids were received.

\$2,200 deposited as security on bids.

2. Grading and curbing on Cleveland street, from Arlington avenue to Atlantic avenue.

Four bids were received.

\$120 deposited as security on bids.

3. Repaving with asphalt on concrete Hicks street, from Orange street to Middagh street.

Three bids were received.

\$150 deposited as security on bids.

4. Grading and paving with asphalt on concrete Jerome street, from Jamaica avenue to Glenmore avenue.

Three bids were received.

\$1,500 deposited as security on bids.

5. Grading, curbing, etc., on Seventy-third street, from Third avenue to Fourth avenue.

Four bids were received.

\$200 deposited as security on bids.

6. Repaving with asphalt on concrete Twelfth street, from Eighth avenue to Prospect Park, West.

Three bids were received.

\$300 deposited as security on bids.

7. Grading and curbing on Van Sicken avenue, from Pitkin avenue to Dumont avenue.

Four bids were received.

\$400 deposited as security on bids.

8. Grading, curbing, etc., on Sterling place, from Albany avenue to Kingston avenue.

Five bids were received.

\$375 deposited as security on bids.

9. Grading and paving with granite on sand Hamburg avenue, from Cornelia street to Moffat street.

Five bids were received.

\$2,500 deposited as security on bids.

10. For furnishing and delivering 4,400 cubic yards of clean sharp sand to the various corporation yards in the Borough of Brooklyn.

Five bids were received.

\$300 deposited as security on bids.

11. For furnishing all the labor and materials required for constructing sewers in proposed street through northern portion of Dyker Beach Park, between Eleventh avenue and Seventh avenue, etc.

Three bids were received.

\$50,250 deposited as security on bids.

12. For the erection of an interior public bath building on the west side of Hicks street, about 214 feet 5 inches north of Degraw street.

Five bids were received.

\$5,000 deposited as security on bids.

ON NOVEMBER 12, 1902.

1. For the erection of an interior public bath building on the south side of Pitkin avenue, 75 feet west of Watkins street.

Six bids were received.

\$6,000 deposited as security on bids.

2. For constructing a sewer in Seventy-third street, between Third and Fourth avenues, and an outlet in Fourth avenue, between Seventy-third and Seventy-fourth streets.

Five bids were received.

\$475 deposited as security on bids.

3. For constructing sewer in Third avenue, between Gowanus canal and Third street.

Three bids were received.

\$72 deposited as security on bids.

ON NOVEMBER 19, 1902.

1. For constructing cement concrete sidewalks in various places and on various streets.

One bid was received.

\$75 deposited as security on bids.

2. For constructing cement concrete sidewalks in various places and on various streets.

One bid was received.

\$50 deposited as security on bid.

3. For flagging sidewalks in various places and on various streets.

One bid was received.

\$50 deposited as security on bid.

4. For fencing vacant lots in various places and on various streets.

Four bids were received.

\$100 deposited as security on bids.

5. For fencing vacant lots in various places and on various streets.

Three bids were received.

\$75 deposited as security on bids.

6. For alteration of sewers necessitated by the Atlantic Avenue Improvement Subway in Franklin avenue, between Atlantic avenue and Brevoort place, etc.

Three bids were received.

\$2,475 deposited as security on bids.

7. For furnishing and delivering 3,000 square feet of bluestone flagstone at the Wallabout.

Three bids were received.

\$30 deposited as security on bids.

ON NOVEMBER 26, 1902.

1. For constructing a sewer in Ovington avenue, between Third avenue and Fourth avenue, and outlet sewers in Silliman place, between Third avenue and Second avenue, etc.

Five bids were received.

\$875 deposited as security on bids.

ON DECEMBER 10, 1902.

1. Paving with trap-block pavement on sand foundation Bradford street from Liberty avenue to Pitkin avenue.

Six bids were received.

\$750 deposited as security on bids.

2. For grading, curbing, etc., on Fortieth street, from New Utrecht avenue to Fort Hamilton avenue.

Four bids were received.

\$300 deposited as security on bids.

3. For grading, curbing, etc., on Tenth avenue, from Thirty-ninth street to New Utrecht avenue.

Four bids were received.

\$200 deposited as security on bids.

4. For grading, curbing, etc., on Folsom place, from Linwood street to Essex street.

Three bids were received.

\$85 deposited as security on bids.

ON DECEMBER 3, 1902.

1. For furnishing all the labor and material required for the erection of a public comfort station at the junction of Division avenue and Broadway.

Six bids were received.

\$2,100 deposited as security on bids.

2. For the erection of a public comfort station at the junction of Fulton street and Joralemon street.

Four bids were received.

\$1,400 deposited as security on bids.

3. For the erection of a public comfort station at the junction of Fulton street and Flatbush avenue.

Four bids were received.

\$1,400 deposited as security on bids.

ON DECEMBER 17, 1902.

1. For the erection of a public comfort station at the northeast corner of Manhattan avenue and Greenpoint avenue.

Three bids were received.

\$1,050 deposited as security on bids.

2. For the erection of a public comfort station at the junction of Hamilton avenue and Richards street.

Two bids were received.

\$700 deposited as security on bids.

3. For the erection of a public comfort station at the junction of East New York and Liberty avenues.

Four bids were received.

\$1,400 deposited as security on bids.

1. For sewer in Eightieth street, between Third and Fourth avenues.

Seven bids were received.

\$455 deposited as security on bids.

2. For constructing a sewer in Seventy-eighth street, between Third avenue and Fourth avenue.

Seven bids were received.

\$1,050 deposited as security on bids.

3. For constructing a sewer in Fifty-third street, between Seventh avenue and Eighth avenue, etc.

Five bids were received.

\$475 deposited as security on bids.

4. For constructing a sewer in Ovington avenue, between Fourth avenue and Fifth avenue, etc.

Six bids were received.

\$1,170 deposited as security on bids.

ON DECEMBER 24, 1902.

1. For making general repairs and alterations to the interior of the Borough Hall.

Four bids were received.

\$2,000 deposited as security on bids.

2. Repaving with asphalt on concrete Boerum street, from Manhattan avenue to Leonard street.

Two bids were received.

\$100 deposited as security on bids.

3. Paving with asphalt on concrete Hinsdale street, from Atlantic avenue to Sutter avenue.

Two bids were received.

\$600 deposited as security on bids.

4. For one (1) stone crusher.

Four bids were received.

\$150 deposited as security on bids.

5. For two (2) steam road rollers.

One bid was received.

\$100 deposited as security on bid.

ON DECEMBER 31, 1902.

1. For sewer basin at the southwest corner of Cortelyou road and East Eighteenth street.

One bid was received.

\$350 received as security on bids.

2. For sewer in East Twenty-first street, between Albemarle road and Regent place.

Four bids were received.

\$150 deposited as security on bids.

3. For sewer in Nostrand avenue, between Avenue C and Newkirk avenue.

Four bids were received.

\$580 deposited as security on bids.

4. For sewer in New York avenue, between Avenue C and Avenue D, etc.

Three bids were received.

\$1,245 deposited as security on bids.

List Showing Bids Rejected by the Borough President of Brooklyn During the Year Ending December 31, 1902:

ON MAY 7, 1902.

1. For furnishing and delivering 250,000 granite blocks to the Bureau of Highways.

Five bids were received.

\$1,250 deposited as security on bids.

Rejected May 16, 1902.

2. For flagging various sidewalks in the Borough of Brooklyn.

One bid was received.

\$1,757 deposited as security on bid.

Rejected May 16, 1902.

Readvertised and bids opened under date of June 4, 1902.

Rejected June 6, 1902.

3. For constructing cement concrete sidewalks in various places and on various streets.

Two bids were received.

\$213.25 deposited as security on bids.

Rejected July 26, 1902.

ON MAY 14, 1902.

1. For replacing and rebuilding a 16-inch cast-iron outlet sewer at the foot of Fifteenth avenue.

One bid was received.

\$75 deposited as security on bid.

Rejected May 20, 1902.

Readvertised and bids were opened under date of June 11, 1902.

Rejected June 17, 1902.

ON MAY 21, 1902.

1. For constructing sewer in Narrows avenue, between Seventy-first street and the Shore road, and an outlet sewer in Eighty-third street, between Narrows avenue and the Shore road.

Six bids were received.

\$4,245 deposited as security on bids.

Rejected June 5, 1902.

ON JUNE 11, 1902.

1. For furnishing and delivering 1,000 gross tons of white ash anthracite coal to the Bureau of Sewers.

Two bids were received.

\$200 deposited as security on bids.

Rejected June 17, 1902.

ON JULY 2, 1902.

1. For furnishing all the labor and materials required for constructing sewers in Dahlgren place, between Ninety-second street and Fort Hill place, and Battery place, between Ninety-second street and Cropsey avenue, and outlet sewers in Fort Hill place, between Battery place and Dahlgren place; Battery place, between Cropsey avenue and One Hundred and Sixth street; One Hundred and Sixth street, between Battery place and Seventh

Four bids were received.

\$3,000 deposited as security on bids.

Rejected July 8, 1902.

2. For furnishing and delivering engineers' supplies to the various public buildings in the Borough of Brooklyn.

Three bids were received.

\$75 deposited as security on bids.

Rejected July 22, 1902.

ON AUGUST 6, 1902.

1. For grading lots on the south side of Greene avenue, between Marcy avenue and Tompkins avenue.

Three bids were received.

\$45 deposited as security on bids.

Rejected September 2, 1902.

2. For grading lots on the south side of Sixtieth street, between Third and Fourth avenues.

Five bids were received.

\$12.50 deposited as security on bids.

Rejected September 2, 1902.

3. For grading lots on the north side of Chauncey street, from Rockaway avenue to Broadway.

Three bids were received.

\$60 deposited as security on bids.

Rejected September 2, 1902.

ON OCTOBER 29, 1902.

1. For constructing sewer in East Nineteenth street, between Albemarle road and Beverly road.

One bid was received.

\$125 deposited as security on bid.

Rejected October 30, 1902.

ON NOVEMBER 19, 1902.

1. For furnishing all the labor and materials required for making general repairs and alterations to the interior of Borough Hall.

Four bids were received.

\$2,000 deposited as security on bids.

Rejected November 28, 1902.

ON DECEMBER 10, 1902.

1. For dredging Gowanus canal, Wallabout canal, East river, foot of Division avenue, and Newtown creek, foot of Metropolitan .

One bid was received.

\$300 deposited as security on bid.

Rejected December 10, 1902.

*List of Contracts Entered Into in the Borough of Brooklyn,
City of New York, by the President of the Borough of
Brooklyn, During the Year Ending December 31, 1902.*

BUREAU OF HIGHWAYS.

For Repaving with Asphalt on a Concrete Foundation.

	Estimated Cost.
1. Pacific street, from Columbia street to Court street.....	\$14,117 30
2. Osborne street, from East New York avenue to Sutter avenue	14,132 40
3. Suydam street, from Knickerbocker avenue to Irving avenue, and Irving avenue, from Suydam street to Starr street.....	10,416 60
4. Wilson street, from Bedford avenue to Lee avenue.....	5,268 00
5. Floyd street, from Nostrand avenue to Throop avenue....	22,864 50
6. Kosciusko street, from Lewis avenue to Throop avenue..	14,437 25
7. Third avenue, from Sixtieth street to Shore road.....	114,204 08
8. Hopkins street, from Nostrand avenue to Throop avenue..	23,029 10
9. Saratoga avenue, from Bainbridge street to Chauncey street	6,381 40
10. McDougall street, from Rockaway avenue to Broadway..	11,704 65
11. Patchen avenue, from Macon street to Decatur street....	3,888 35
12. Hamburg avenue, from Putnam avenue to Cornelia street; Putnam avenue, from Hamburg avenue 200 feet east, and Cornelia street, from Hamburg avenue 200 feet east.	5,502 40
13. Decatur street, from Howard avenue to Bushwick avenue.	25,577 75
14. Evergreen avenue, from Ralph street to Grove street; from Eldert street to Covert street; from Moffat street to Chauncey street, and Ralph street, from Evergreen avenue 200 feet east, and Covert street, from Evergreen avenue 100 feet east.....	9,546 30
15. Maujer street, from Leonard street to Bushwick avenue..	14,923 80
16. Harman street, from Myrtle avenue to Irving avenue, and Irving avenue, from Harman street to Greene avenue..	10,711 50
17. Java street, from Oakland street to Franklin street.....	13,363 50
18. DeKalb avenue, from Fulton street to Clinton avenue....	26,394 50
19. Fourth avenue, from Fortieth street to Sixtieth street....	66,563 55
20. Third avenue, from Atlantic avenue to Flatbush avenue..	3,813 00
21. Wolcott street, from Conover street to Richards street....	7,077 00
22. Marcy avenue, from Macon street to Fulton street.....	3,120 60
23. Nostrand avenue, from Flushing avenue to Willoughby avenue	11,392 50
24. Nelson street, from Smith street to Columbia street.....	14,710 90
25. Lefferts place, from St. James' place to Franklin avenue..	17,269 70
26. Hart street, from Broadway to Central avenue, and Central avenue, from Hart street to Suydam street.....	13,186 80

	Estimated Cost.
27. New York avenue, from Park place to Eastern Parkway..	\$9,272 40
28. Howard avenue, from Broadway to Madison street, and Madison street, from Howard avenue to 150 feet west..	4,087 40
29. Monroe street, from Classon avenue to Franklin avenue, and from Bedford avenue to Nostrand avenue.....	13,877 05
30. Seigel street, from Broadway to Bushwick avenue.....	15,038 00
31. Herkimer street, from Nostrand avenue to Albany avenue.	23,437 40
32. Willoughby avenue, from Grand avenue to Bedford avenue.	17,650 80
33. Pacific street, from Albany avenue to Schenectady avenue.	11,607 40
34. Congress street, from Court street to Columbia street.....	13,554 50
35. Aberdeen street, from Broadway to Bushwick avenue....	4,081 50
36. Cranberry street, from Fulton street to Columbia Heights.	6,735 30
37. Gates avenue, from Lewis avenue to Ralph avenue.....	18,924 50
38. South Third street, from Wythe avenue to Union avenue..	30,912 20
39. Pacific street, from Court street to Bond street.....	14,071 50
40. Middagh street, from Henry street to Columbia Heights..	5,959 00
41. Conselyea street, from Union avenue to Humboldt street..	15,954 90
42. Chauncey street, from Fulton street to Reid avenue.....	14,464 50
43. Keap street, from Broadway to Grand street.....	10,545 20
44. Reid avenue, from Broadway to Madison street.....	15,584 50
45. Willoughby avenue, from Washington Park to Clinton avenue	7,583 00
46. Madison street, from Bedford avenue to Nostrand avenue, and from Throop avenue to Sumner avenue.....	13,415 30
47. Hoyt street, from Union street to Carroll street.....	2,915 00
48. Twenty-fourth street, from Third avenue to Fourth avenue.	5,177 50
49. Baltic street, from Clinton street to Fifth avenue.....	36,860 00
50. Fourteenth street, from Third avenue to Fourth avenue..	5,115 85
51. Eighth avenue, from Eighth street to Sixteenth street, and Thirteenth street, from Eighth avenue to Prospect Park, West	23,579 00
52. Putnam avenue, from Nostrand avenue to 653 feet east....	5,392 00
53. Albany avenue, from Eastern parkway to Lincoln road...	21,440 00
54. Eighth avenue, from Fourth street to Eighth street.....	9,262 40
55. Prospect Park, West, from Fifteenth street to Nineteenth street	13,685 00
56. Hall street, from Flushing avenue to Park avenue.....	4,242 50
57. Middleton street, from Wallabout street to Lee avenue, and from Harrison avenue to Throop avenue.....	8,962 60
58. Ellery street, from Nostrand avenue to Marcy avenue....	7,214 00
59. Sutton street, from Nassau avenue to Driggs avenue....	4,767 50
60. Poplar street, from Hicks street to Henry street.....	2,653 50
61. Skillman street, from Lafayette avenue to DeKalb avenue.	2,939 40
62. Halsey street, from a point 300 feet east of Nostrand avenue to Sumner avenue.....	18,995 00
63. Covert street, from Broadway to Evergreen avenue.....	9,365 20

	Estimated Cost.
64. Guernsey street, from Calyer street to Meserole avenue...	\$2,641 75
65. Olive street, from Grand street to Powers street, and from Devoe street to Metropolitan avenue.....	3,340 00
66. Palmetto street, from Evergreen avenue to Central avenue.	6,002 50
67. Patchen avenue, from Hancock street to Macon street, and from Decatur street to Fulton street.....	13,942 40
68. Thames street, from Morgan avenue to Knickerbocker avenue, and Vandervoort place, from Thames street to Flushing avenue.....	5,405 50
69. Wilson street, from Lee avenue to Division avenue.....	3,551 00
70. Prospect place, from Franklin avenue to Nostrand avenue.	13,347 00
71. Park place, from Washington avenue to Vanderbilt avenue.	12,121 00
72. Poplar street, from Hicks street to Columbia Heights....	3,334 70
73. Lorimer street, from Nassau avenue to Noble street, on present pavement and concrete; Meserole avenue, from Guernsey street to Manhattan avenue, on concrete foundation	15,656 40
74. TenEyck street, from Bushwick avenue to Waterbury street	5,228 30
75. Nostrand avenue, from Macon street to Prospect place....	12,539 60
76. Bergen street, Bedford avenue to Kingston avenue.....	17,469 45
77. Hicks street, from Orange street to Middagh street.....	2,696 40
78. Twelfth street, from Eighth avenue to Prospect Park, West	5,139 60
	\$1,055,425 83

Repaving with Asphalt on Present Pavement.

	Estimated Cost.
1. Nutria alley, from Adams street, 100 feet east.....	\$399 30
22. Clermont avenue, from Atlantic avenue to Flushing avenue	32,957 50
3. Second avenue, from Fifty-eighth street to Fifty-ninth street	1,362 00
	\$34,718 80

Repaving with Asphalt Blocks on Concrete Foundation.

	Estimated Cost.
1. Twenty-second street, from Third avenue to Sixth avenue	\$20,109 00
2. Maujer street, from Florence street to Morgan avenue.	13,809 00
3. Rush street, from Kent avenue to Division avenue....	8,850 50
	\$42,768 50

Repairing and Maintaining Asphalt Pavements in the Various Streets in the Borough of Brooklyn where the Original Guarantee has Expired.

	Estimated Cost.
1. Asphalt pavement repairs throughout the borough....	\$9,100 00

Grading and Paving with Asphalt on Concrete Foundation.

	Estimated Cost.
1. Osborne street, from Sutter avenue to Blake avenue..	\$4,847 90
2. Glenmore avenue, from Stone avenue to Rockaway avenue	6,847 22
3. Ninety-ninth street, from Third avenue to Fort Hamilton avenue.....	8,328 00
4. Dean street, from Sackman street to Rockaway avenue	10,008 00
5. East Nineteenth street, from Tennis court to Beverly road	11,694 20
6. Seventh avenue, from Forty-first street to Forty-third street	5,637 40
7. Woodruff avenue, from Parade place to Flatbush avenue	13,162 00
8. Jerome street, from Jamaica avenue to Glenmore avenue	20,378 50
	\$80,903 20

Répaving with Granite Blocks on Concrete Foundation.

	Estimated Cost.
1. Degraw street, from Van Brunt street to Hicks street, and Tiffany place, from Degraw street to Harrison street	\$21,385 15
2. Rockwell place, from De Kalb avenue to Lafayette avenue	9,554 50
3. Court street, from Bryant street to Hamilton avenue..	30,379 50
4. Morgan avenue, from Johnson avenue to Flushing avenue.	12,757 10
5. Richardson street, from Graham avenue to Leonard street	12,707 70
6. Third avenue, from Twenty-sixth street to Thirty-eighth street	36,153 50
7. Amity street, from Columbia street to East river.....	4,888 90
8. Third avenue, from Atlantic avenue to Union street.....	25,840 20
9. Manhattan avenue, from Grand street to Meeker avenue.	31,689 70
10. Hoyt street, from Union street to Atlantic avenue.....	21,791 65

	Estimated Cost.
11. Prospect avenue, from Fourth avenue to Seventh avenue	\$37,619 30
12. Forty-second street, from First avenue to Third avenue.	15,890 50
13. Garden street, from Flushing avenue to Bushwick avenue	7,763 25
14. Hudson avenue, from Sands street to the East river...	22,231 00
15. Flushing avenue, from Navy street to Washington avenue	26,039 00
16. Van Dyke street, from Van Brunt street to Richards street	5,706 30
	\$322,397 25

Repairing with Granite Blocks on Sand Foundation.

	Estimated Cost.
1. Melrose street, from Hamburg avenue to Flushing avenue	\$10,548 30
2. Avenue U, from East Seventeenth street to East Nineteenth street.....	2,288 00
3. Varick avenue, from Metropolitan avenue to Flushing avenue	25,991 30
	\$38,827 60

Grading and Paving with Granite Blocks on Concrete Foundation, with Tar and Gravel Joints between Tracks and Rails of the Brooklyn Rapid Transit Company.

	Estimated Cost.
1. Flatbush avenue, from Malbone street to Church avenue	\$12,802 44

Grading and Paving with Granite Blocks on Sand.

	Estimated Cost.
1. Pitkin avenue, from Snediker avenue to Linwood street	\$64,075 85
2. Meserole street, from Waterbury street to Morgan avenue, and Waterbury street, from Meserole to Stagg street.	15,295 50
3. Hamburg avenue, from Cornelia street to Moffat street	19,312 50
	\$98,683 85

Repaving with Medina Sandstone on Concrete.

	Estimated Cost.
1. High street, from Jay street to Bridge street.....	\$5,279 90
2. South Third street, from Kent avenue to Wythe avenue.	5,463 80
	\$10,743 70

Grading and Paving with Macadam Pavement.

	Estimated Cost.
1. Mermaid avenue, from West Fifteenth street to West Nineteenth street.....	\$8,034 70
2. Seventy-first street, from Third avenue to the Shore road	18,317 45
3. Clarkson street, from New York avenue to Troy avenue	20,616 98
4. Albany avenue, from Lincoln road to Clarkson street.....	14,800 20
	\$61,769 33

Paving, Curbing and Laying Concrete Foundation.

	Estimated Cost.
1. State street, from Hicks street to Henry street.....	\$1,512 90

Grading, Curbing, Guttering and Laying Sidewalks.

	Estimated Cost.
1. Fifty-seventh street, from Seventh avenue to Eighth avenue	\$5,621 96
2. Kingston avenue, from Douglass street to Eastern parkway	2,481 80
3. Buffalo avenue, from St. Mark's place to Eastern parkway.	4,041 40
4. Rutland road, from Kingston to Albany avenues, etc....	6,918 50
5. Hinsdale street, from Atlantic to Sutter avenues.....	6,823 70
6. Glen street, from Railroad avenue to Euclid avenue.....	3,927 50
7. Cleveland street, from Arlington avenue to Atlantic avenue.	1,671 15
8. Van Sicklen avenue, from Pitkin avenue to Dumont avenue	4,751 80
9. Seventy-third street, from Third avenue to Fourth avenue.	1,567 50
10. Sterling place, from Albany avenue to Kingston avenue...	2,280 70
11. Fortieth street, from New Utrecht avenue to Fort Hamilton avenue.....	4,167 40
	\$44,253 41

Grading.

	Estimated Cost.
1. Sixty-first street, from Fourth to Fifth avenues.....	\$7,776 00

Grading, Curbing and Guttering.

	Estimated Cost.
1. Seventy-second street, from Sixth to Fort Hamilton avenues	\$4,951 99
2. Fifty-fourth street, from Seventh to Fort Hamilton avenues	11,723 45
3. Sterling place, from Troy to Schenectady avenues.....	1,278 00
4. Seventy-third street, from Sixth to Fort Hamilton avenues.....	5,409 50
5. Butler place, from Plaza street to Sterling place.....	10,419 60
	\$33,782 54

Fencing Lots.

	Estimated Cost.
1. On the north side of Lexington avenue, between Sumner and Lewis avenues, etc.....	\$795 63
2. On the northwest side of New Lots road, between Schenck avenue and Barbey street, etc.....	201 60
3. On the east side of Graham avenue, between First street and Richardson street, etc.....	1,963 15
4. On the northeast side of Irving avenue, between Stanhope street and Himrod street, etc.....	1,239 50
5. On east side of Howard avenue, between Bainbridge and Chauncey streets, etc.....	1,431 90
6. On south side of Atlantic avenue, between Jerome street and Warwick street, etc.....	945 01
7. On north side of Fortieth street, between Fort Hamilton and Twelfth avenues, etc.....	880 40
	\$7,457 19

Grading Lots.

	Estimated Cost.
1. On the north side of Forty-seventh street, between Fifth avenue and Sixth avenue.....	\$1,092 63
2. On the south side of Forty-first street, between Fourth avenue and Fifth avenue.....	836 88
3. On the southeast side of Bleecker street, between Irving avenue and Wyckoff avenue.....	133 00
4. On the south side of Sterling place, between Vanderbilt avenue and Butler place.....	1,359 84
5. On the south side of Eleventh street, between Eighth avenue and Prospect Park, West.....	349 27
6. On the north side of Seventh street, between Eighth avenue and Prospect Park, West.....	450 16
7. On the south side of Thirty-seventh street, between Fourth avenue and Fifth avenue.....	429 78

	Estimated Cost.
8. On the east side of Fifth avenue, between Forty-eighth street and Forty-ninth street.....	\$1,710 40
	\$6,361 90

Constructing Cement Concrete Sidewalks in Various Places and on Various Streets.

	Estimated Cost.
1. North side of Thirty-seventh street, between Fourth avenue and Fifth avenue, etc.....	\$1,186 08
2. North side of Twenty-seventh street, between Fourth avenue and Fifth avenue, etc.....	3,325 60
3. West side of Essex street, between Atlantic avenue and Liberty avenue, etc.....	2,268 12½
4. South side of Glenmore avenue, between Grant avenue and Euclid avenue.....	5,988 46½
5. South side of Chauncey street, between Howard avenue and Saratoga avenue, etc.....	2,728 12
6. West side of Gates avenue, between Central avenue and Hamburg avenue, etc.....	2,105 40
7. West side of Fourth avenue, between Seventy-third street and Seventy-fourth street, etc.....	3,898 47
	\$22,100 26

Flagging Sidewalks in Various Places and on Various Streets.

	Estimated Cost
1. East side of Third avenue, between Warren street and Baltic street, etc.....	\$5,209 68
2. East side of Lewis avenue, between Gates avenue and Quincey street, etc.....	5,542 87½
3. East side of St. Nicholas avenue, between Bleecker street and Ralph street, etc.....	7,736 17½
4. East side of Fourth avenue, between Twenty-fifth street and Twenty-sixth street, etc.....	2,773 03¾
5. East side of Graham avenue, between Frost and Richardson streets, etc.....	5,032 44
6. West side of Fifth avenue, between Forty-sixth and Forty-seventh streets, etc.....	2,958 40
	\$29,252 60

	Estimated Cost
1. For constructing a bridge over Garrettson's creek at Avenue U.....	\$15,800 47

Supplies.

	Estimated Cost.
1. Furnishing and delivering forage.....	\$992 97
2. Furnishing and delivering 1,920 cubic yards of broken trap rock, 1,075 cubic yards of trap-rock screenings.....	5,462 88
3. Furnishing and delivering 2,230 cubic yards of broken trap rock, 825 cubic yards of trap-rock screenings, 650 cubic yards of broken limestone, 450 cubic yards of limestone screenings	7,828 02
4. Furnishing and delivering 4,000 enameled street signs....	2,688 00
5. Furnishing and delivering 1,700 cubic yards of broken limestone, 525 cubic yards of limestone screenings, 300 cubic yards of trap-rock screenings.....	5,302 50
6. Furnishing and delivering at Lexington avenue yard 1,200 cubic yards of clean sharp sand.....	1,051 20
7. Furnishing and delivering at North Eighth street yard 1,000 cubic yards of clean sharp sand.....	960 00
8. Furnishing and delivering 1,000 cubic yards clean sharp sand at the Douglass street yard and 1,200 cubic yards clean sharp sand at the Wallabout yard.....	1,267 20
9. Furnishing and delivering to Wallabout yard 3,000 linear feet bluestone curb.....	2,016 00
10. Furnishing and delivering 1,200 cubic yards broken trap rock and 800 cubic yards trap-rock screenings.....	3,552 00
11. Furnishing and delivering 2,200 cubic yards sand at Douglass street and Wallabout yards, 1,000 cubic yards sand at North Eighth street yard, 1,200 cubic yards sand at Lexington avenue yard.....	3,372 00
12. Furnishing and delivering at Wallabout yard 3,000 square feet new bluestone flagstone.....	648 00
	\$35,140 77

BUREAU OF SEWERS.

Constructing.

	Estimated Cost.
1. Sewer in Eighty-first street, between Third and Second avenues	\$1,049 57
2. Sewer in Narrows avenue, between Bay Ridge avenue and Seventy-first street.....	3,483 10
3. Sewer in Eighty-fourth street, between Second and Third avenues	1,155 00
4. Sewer in Seventy-fourth street, between Fourth and Seventh avenues, and an outlet sewer in Sixth avenue, between Seventy-fourth and Seventy-sixth streets.....	5,293 85

Estimated Cost.

5. Sewer in Starr street, between St. Nicholas and Wyckoff avenues	\$665 30
6. Sewer in Degraw street, between Third and Fourth avenues	1,062 91
7. Sewer in Hart street, between Irving and Wyckoff avenues.	1,329 73
8. Sewer in Nineteenth street, between high-water mark and the bulkhead line.....	7,912 00
9. Sewer in North Eighth street, between Union avenue and Havemeyer street.....	1,447 30
10. Sewer in North Tenth street, between Union avenue and Roebling street.....	734 35
11. Sewer in Varick avenue, between Thames street and Johnson avenue.....	2,666 55
12. Sewer in Fifty-eighth street, between Seventh and Eighth avenues	1,169 20
13. Sewer in Forty-ninth street, between Sixth and Seventh avenues	1,165 00
14. Sewer in Coles street, between Henry street and Hamilton avenue.....	1,500 00
15. Sewer in Fulton street, between Williams place and Alabama avenue.....	1,091 97
16. Sewer in Albany avenue, between Degraw street and Eastern parkway.....	576 30
17. Sewer in Fourth avenue (both sides), between Ninety-ninth and One Hundred and First streets, with a temporary connection crossing One Hundredth street.....	4,449 40
18. Sewer in Avenue G, between Coney Island avenue and Flatbush avenue.....	313,549 75
19. Sewer in Eightieth street, between Fourth and Fifth avenues	1,569 75
20. Sewer in Sixth avenue, between Forty-ninth and Fiftieth streets	511 75
21. Sewer in Eighty-ninth street, between Fourth and Fifth avenues	975 28
22. Sewer in Denton place, between First and Carroll streets.	774 00
23. Sewer in Mermaid avenue, between Fifteenth street and Stillwell place.....	1,399 86
24. Sewer in Bedford avenue, between Montgomery street and Flatbush avenue.....	116,865 75
25. Sewer in Third avenue, between Seventy-ninth and Eightieth streets.....	593 75
26. Sewer in Seventy-sixth street, between Third avenue and Fourth avenue.....	1,631 65
27. Sewer in Fort Hamilton avenue, between Sixty-fifth and Sixty-sixth streets, and outlet sewer in Sixty-fifth street (south side), between Fort Hamilton and Tenth avenues	2,242 00

	Estimated Cost.
28. Sewer in Ridgewood avenue, between Euclid and Norwood avenues	\$2,919 50
29. Sewer in Sixtieth street, between Fourteenth and Nineteenth avenues, etc.....	297,993 00
30. Sewer in proposed street through northern portion of Dyker Beach Park, between Eleventh and Seventh avenues, etc.....	633,256 25
31. Sewer in Seventy-third street, between Third and Fourth avenues, etc.....	2,610 00
32. Sewer in Third avenue, between Gowanus canal and Third street	761 60
33. Sewers necessitated by Atlantic avenue improvement subway in Franklin avenue, between Atlantic avenue and Brevoort place.....	34,613 00
34. Ovington avenue, between Third and Fourth avenues, etc.	5,121 20
	\$1,454,139 62

Constructing.

	Estimated Cost.
1. A 48-inch wooden barrel outlet sewer at the foot of Sackett street, East river.....	\$5,537 00
2. Sewer crossings under the Atlantic avenue improvement subway at Howard avenue, Saratoga avenue, Rockaway avenue, Eastern parkway extension and Hopkinson avenue	35,715 00
3. A 30-inch cast-iron pipe storm sewer, etc., at Caisson No. 2, Coney Island.....	3,446 65
4. An 18-inch by 18-inch wooden trunk outlet sewer through pier at the foot of Fifteenth avenue.....	2,828 70
5. Repairing and reconstructing the main sewer in Hegeman avenue, between Hinsdale street and Williams avenue.	5,790 60
	\$53,307 95

Constructing Sewer Basins.

	Estimated Cost.
1. Basin at the east corner of Seventeenth avenue and Benson avenue	\$93 00
2. Basin at the west corner of Eighty-fourth street and Twenty-first avenue.....	91 00
3. Basin at the south side of Eighty-sixth street and Seventeenth avenue.....	91 00
4. Basin at the southwest corner of Barbey street and Pitkin avenue	93 00

Estimated Cost.

5. Basins at the southwest corner of Beverly road and East Eleventh street, southwest corner of Beverly road and East Thirteenth street, southwest corner of Beverly road and East Fourteenth street.....	\$285 00
6. Basin at the northerly corner of Bay Twenty-sixth street and Bath avenue.....	100 00
7. Basin at the easterly corner of Nineteenth avenue and Bath avenue.....	100 00
8. Basin at the southeast corner of Devoe street and Judge street	117 00
9. Basin at the easterly corner of Irving avenue and Stanhope street	95 00
10. Fourteen sewer basins in Albermarle road at East Eleventh street	1,246 00
	\$2,311 00

Supplies.

Estimated Cost.

1. Six thousand four hundred barrels of quick lime at various disposal works in the Twenty-sixth and Thirty-first Wards	\$6,528 00
2. One thousand gross tons (2,240 pounds to a ton) of white ash anthracite coal to the various disposal works in the Twenty-sixth and Thirty-first Wards.....	4,582 80
3. Forage	1,311 74
4. One 65 horse-power boiler and appurtenances for Station No. 2, Thirty-first Ward Sewage Disposal Works....	1,575 00
5. Rubber goods, hose, boots, etc.....	1,873 02
6. Two 6-inch centrifugal sludge pumping plants at Caissons Nos. 2 and 3, Coney Island.....	2,350 00
	\$18,220 56

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

Estimated Cost.

1. Repairing and fitting out five (5) public baths in the Borough of Brooklyn.....	\$3,373 00
2. Making changes, additions, extensions, alterations and improvements to the Kings County Hall of Records....	398,700 00
3. Erecting an interior public bath building on the west side of Hicks street, about 214 feet 5 inches north of Degraw street, Borough of Brooklyn.....	54,564 00
	\$456,637 00

Supplies.

	Estimated Cost.
1. Furnishing and delivering 1,410 gross tons of white ash anthracite coal.....	\$6,912 30
2. Furnishing and delivering janitors' supplies to Bureau of Public Buildings and Supplies.....	1,884 94
3. Furnishing and erecting 100 headstones over graves of deceased veteran Union soldiers, etc.....	1,180 00
	\$9,977 24

List of Contracts Pending in the Office of the Assistant Commissioner of Public Works which Have Not as Yet Been Registered by the Comptroller—December 31, 1902.

	Estimated Cost.
1. Erecting an interior public bath building on the south side of Pitkin avenue, 75 feet west of Watkins street.....	\$79,300 00
2. Flagging sidewalks.....	2,773 03¼
3. Erecting a public comfort station at the junction of Division avenue and Broadway.....	23,000 00
4. Erecting a public comfort station at the junction of Fulton street and Joralemon street.....	23,000 00
5. Erecting a public comfort station at the junction of Fulton street and Flatbush avenue.....	22,950 00
6. Paving with trap-rock pavement on sand Bradford street, from Liberty avenue to Pitkin avenue.....	7,544 00
7. Grading, curbing, etc., on Tenth avenue, from Thirty-ninth street to New Utrecht avenue.....	1,876 50
8. Grading, curbing, etc., of Folsom place, from Linwood street to Essex street.....	1,252 00
9. For sewer in Seventy-eighth street, between Third avenue and Fourth avenue, etc.....	3,885 60
10. For sewer in Eightieth street, between Third avenue and Fourth avenue.....	1,925 16
11. For sewer in Fifty-third street, between Seventh avenue and Eighth avenue, etc.....	2,696 45
12. For sewer in Ovington avenue, between Fourth avenue and Fifth avenue, etc.....	6,067 90
13. Erecting a public comfort station at the northeast corner of Manhattan and Greenpoint avenues.....	20,170 00
14. Erecting a public comfort station at the junction of Hamilton avenue and Richards street.....	22,870 00
15. Erecting a public comfort station at the junction of East New York avenue and Liberty avenue.....	15,200 00
16. Repaving with asphalt on concrete Boerum street, from Manhattan avenue to Leonard street.....	3,590 00

	Estimated Cost.
17. Paving with asphalt on concrete Hinsdale street, from Atlantic avenue to Sutter avenue.....	\$15,712 50
18. For one (1) stone crusher.....	1,044 00
19. For two (2) steam road rollers.....	5,300 00
20. For making repairs to the interior of the Borough Hall..	16,625 00
21. Sewer basin at the southwest corner of Cortelyou road and East Eighteenth street.....	130 00
22. Sewer in East Twenty-first street, between Albemarle road and Regent place.....	989 00
23. Sewer in Nostrand avenue, between Avenue C and New-kirk avenue.....	3,346 10
24. Sewer in New York avenue, between Avenue C and Avenue D, etc.....	13,024 10
	\$294,271 34¼

RECAPITULATION.

	CON-TRACTS.	ESTIMATED COST.
<i>Bureau of Highways.</i>		
1. Asphalt improvements	93	\$1,222,916 33
2. Granite improvements	23	472,711 14
3. Medina sandstone improvements.....	2	10,743 70
4. Macadam improvements.....	4	61,769 33
5. Paving, grading, curbing, etc., improvements.....	18	87,324 85
6. Fencing improvements.....	7	7,457 19
7. Grading lots.....	8	6,361 96
8. Cement walk improvements.....	7	22,100 26
9. Flagging improvements	6	29,252 60
10. Bridge over Garrettson's creek.....	1	15,800 47
11. Supplies.....	12	35,140 77
	181	\$1,971,578 60
<i>Bureau of Sewers.</i>		
1. Constructing sewers, etc.....	39	\$1,507,447 57
2. Constructing sewer basins.....	10	2,311 00
3. Supplies	6	18,220 56
	55	\$1,527,979 13

	CON- TRACT.	ESTIMATED COST.
<i>Bureau of Public Buildings and Offices.</i>		
1. Construction work, etc.	3	\$456,637 00
2. Supplies.	3	9,977 24
	6	\$466,614 24
Contracts pending.	24	\$294,271 34
Bureau of Highways.	181	\$1,971,578 60
Bureau of Sewers.	55	1,527,979 13
Bureau of Public Buildings and Offices.	6	466,614 24
	242	\$3,966,171 97
Contracts pending.	24	294,271 34
Total.	266	\$4,260,443 31

OTTO KEMPNER,
Assistant Commissioner of Public Works.

CITY OF NEW YORK, BOROUGH OF BROOKLYN,
 OFFICE OF COMMISSIONER OF PUBLIC WORKS,
 BUREAU OF HIGHWAYS,
 CHIEF ENGINEER'S OFFICE—MUNICIPAL BUILDING,
 BROOKLYN, N. Y., January 1, 1903. }

Mr. WILLIAM C. REDFIELD,

Commissioner of Public Works:

DEAR SIR—I herewith submit a statement of the operations of this Bureau for the year ending December 31, 1902.

The change in the City Charter that went into effect on January 1, 1902, made it necessary to organize the old Department of Highways in this borough into the Bureau of Highways under the Borough President.

Mr. N. P. Lewis was made Chief Engineer, but upon his resignation to become Engineer of the Board of Estimate and Apportionment, I was appointed to his place in April.

The change in government made necessary the adoption of new forms of contracts and specifications, so that it was quite late in the season when new work was advertised, the first bids being opened on May 14.

Work on the preparation of plans was vigorously pushed, and contracts were made as follows during the year:

CHARACTER OF CONTRACT.	STREET IMPROVEMENT FUND.	REPAVING STREETS, SECTIONS 48 AND 169, LAWS OF 1901, CHAPTER 466.	LABOR, MAINTENANCE AND SUPPLIES.	REPAVING STREETS AND AVENUES, 1902.	SPECIAL REVENUE FUND FOR BRIDGE, GERRETSONS CREEK.	SPECIAL REVENUE FUND FOR STREET SIGNS.
94 asphalt.....	\$210,819 80	\$990,419 76	.....	\$31,879 29	.....	.....
23 granite.....	107,347 62	318,527 78	\$617 45	46,218 29	.....	.....
1 trap-block.....	7,544 00	.....	.....	.....	.....	.....
4 macadam.....	61,769 33	.....	.....	.....	.....	.....
2 medina.....	.....	10,743 70	.....	.....	.....	.....
18 regulating, grad- ing, curbing and gutter.....	87,063 95	.....	.....	.....	.....	.....
1 curb and concrete..	.....	1,512 90	.....	.....	.....	.....
6 flagging.....	29,252 68	.....	.....	.....	.....	.....
7 cement walks.....	22,100 27	.....	.....	.....	.....	.....
6 fencing.....	7,457 19	.....	.....	.....	.....	.....
8 grading lots.....	6,361 96	.....	.....	.....	.....	.....
6 sand.....	.....	.....	6,650 49	.....	.....	.....
4 broken stone and screenings.....	.....	.....	22,145 40	.....	.....	.....
1 bluestone curbing..	.....	.....	2,016 00	.....	.....	.....
1 bluestone flagging.	.....	.....	648 00	.....	.....	.....
1 forage.....	.....	.....	902 70	.....	.....	.....
1 steam roller.....	.....	.....	5,300 00	.....	.....	.....
1 crusher.....	.....	.....	1,044 00	.....	.....	.....
1 maintain asphalt pavements.....	.....	.....	9,100 00	.....	.....	.....
1 bridge.....	.....	.....	.....	.....	\$15,800 47	.....
1 street sign.....	.....	.....	.....	.....	.....	\$2,688 00
Totals.....	\$539,716 73	\$1,321,204 14	\$48,423 95	\$78,097 58	\$15,800 47	\$2,688 00
Total				\$2,003,930 87		

	ASPHALT.	GRANITE.	MEDINA.
Street Improvement Fund.....	10	4	..
Repaving Streets, sections 48 and 169, chapter 466 Laws of 1901.....	78	16	2
Labor, Maintenance and Supplies, Appropria- tion for 1902.....	..	..	..
Repaving Streets and Avenues, Appropriation for 1902.....	6	4	..
	94	24	2

	TOTAL MILEAGE CONTRACTED DURING 1902.	1898 TO 1901, INCLUSIVE.
Asphalt.....	30.01	27.19
Granite.....	8.09	6.38
Macadam.....	1.51	3.23
Trap-block.....	.17	1.09
Medina Sandstone.....	.18	....
Wood.....	.08	....
Cobble.....	....	.12
Belgian.....	....	2.48
Total.....	40.04	40.49

From this it will be seen that the amount of pavement contracted for in 1902 is practically equal to that contracted for during the previous four years.

Minor contracts made during the year are as follows:

	1902.	1898 TO 1901, INCLUSIVE.
Regulating and grading.....	18	3
Flagging sidewalks, square feet.....	138,140	143,122
Cement sidewalks.....	143,500	68,094
Fencing vacant lots, lineal feet.....	17,892	11,087

These contracts have not all been completed, for several reasons.

On account of the time at which the improvements were ordered, the contractors were unable to obtain the necessary material promptly. Comparatively little granite pavement has been laid in this borough during the last few years, and consequently the material men had but few blocks on hand, and they had to be ordered and sometimes made after the contracts were awarded. This caused great delay. Then as work was

ordered in the other boroughs, curbstone became scarce and contractors were obliged to move slowly and sometimes stop entirely for want of it.

Then, too, the enormous amount of construction work going on in the entire country created an unprecedented demand for Portland cement, and this shortage was also severely felt. Probably the lack of cement occasioned more delay than all the other causes combined.

I have dwelt thus fully upon these causes, to impress upon you the importance of ordering all contemplated work at the earliest possible moment, so that contractors can place their orders and material men prepare for them in advance. I think that at the present time all understand that the coming season will be even more active than the past, and that material of all kinds can be expected more promptly than in 1902.

In order to relieve the curb situation, it has been decided to use Medina sandstone for curbing. This is a material which has been used very extensively in Rochester, Buffalo, Cleveland and other Western cities, with the best of results. By its use it is hopeful not only to increase the curb available for this market, but to admit a material that will compete with the Hudson river bluestone. With these two stones and the cement curb that will be used, there should be no delay this season on account of lack of curb material.

Notwithstanding the delays above mentioned, a large amount of pavement has been laid:

On completed contracts:

	Miles.
Asphalt	17.09
Granite	4.97
Trap block.	.31
Medina sandstone.	.10
Wood	.08
Total	22.55

On incomplete contracts :

	Miles.
Asphalt	4.19
Granite	1.33
Medina sandstone.....	.08
Total	<u>5.60</u>

Making a total of completed pavements :

	Miles.
Asphalt	21.28
Granite	6.30
Trap block.....	.31
Medina sandstone.....	.18
Wood	.08
Total	<u>28.15</u>

There were also laid under private contract the following :

	Miles.
Asphalt	.99
Granite	.13
Macadam	4.97
Total	<u>6.09</u>

Making the present pavement mileage as compared with
December 31, 1901 :

	DECEMBER 31, 1901.	DECEMBER 31, 1902.
	Miles.	Miles.
Asphalt.....	95.14	117.40
Granite.....	119.87	125.47
Cobble.....	216.80	193.85
Belgian	46.61	46.48
Macadam.....	82.15	87.06
Brick	5.31	4.93
Trap Block....	.78	1.08
Medina Block.....	.....	.18
Wood.....	.....	.08
Total	566.66	576.53

There is yet to be done on incomplete contracts :

	Miles.
Asphalt	2.85
Granite	.83
Macadam	1.10
Regulating, grading and curbing.....	.60
Total	<u>5.38</u>

The mileage of work comprised in contracts in force, but upon which work has not yet begun, is :

	Miles.
Asphalt	6.67
Granite	.96
Trap blocks.....	.19
Macadam	.41
Regulating, grading and curbing.....	2.38
Total	<u>10.61</u>

The estimated cost for the above is \$355,057.36.

The mileage of work comprised in resolutions authorized by the Board of Estimate and Apportionment is :

	Miles.
Asphalt	3.54
Granite	4.50
Regulating, grading and curbing.....	9.42
Total	<u>17.46</u>

The estimated cost is \$662,015.

Surveys are now being made for the above streets, and they will be advertised so that work will be begun on them April 1.

It will be seen that work amounting to \$1,017,072.36 is already assured for 1903.

REPAVING.

Brooklyn has long been known as the city of poor pavements. And not only because so much cobblestone has been used, but on account of the wretched condition of the pavements, the



THE OLD PART OF FOURTH AVENUE, NEAR THIRTY-SEVENTH STREET, LOOKING SOUTH.

appropriations for maintenance and repaving having been so small that it is only recently that the situation has been improved.

On January 1, 1888, Brooklyn had 307.87 miles of cobblestone pavement and 6.46 miles of asphalt pavement, these being 85 and 1.8 per cent. of the entire pavement mileage. On January 1, 1895, the cobblestone pavement had decreased to 284.32 miles and 58.5 per cent., and the asphalt increased to 18.84 miles and 3.9 per cent. At the end of the next eight years, or on January 1, 1903, the cobblestone had been reduced to 193.8 miles, or 33.6 per cent., and the asphalt had reached 117.4 miles, or 20.4 per cent.

During the same period granite block pavement has increased from 27 miles and 7.5 per cent. to 125.5 miles and 21.8 per cent., so that it can be seen that during the last fifteen years a material advancement has been made. But even at this rate it will require many years to free us from the nerve-destroying cobblestone.

In planning the repaving work it was decided to lay smooth pavements around schools, churches and hospitals; to extend new pavements on lines of general traffic; to fill in existing gaps in improved pavements and to begin the work of repaving new arterial streets that were in bad condition.

In carrying out this policy asphalt pavements have been laid around or adjacent to 31 schoolhouses, 25 churches and 9 hospitals.

In paving extensions, the asphalt pavement on Decatur street has been continued from Howard avenue to Bushwick avenue; Albany avenue was repaved to Lincoln road; New York avenue was continued through to Eastern parkway, and many others equally important.

Among the most important gaps filled were those on Third avenue, where the repaving of the sections between Flatbush avenue and Union street, and that between Twenty-sixth and Thirty-eighth streets, taken with the original improvement from Sixtieth street to the Shore road, will make Third avenue

a well-paved thoroughfare its entire length, a distance of about 5.8 miles.

Two important portions of Willoughby avenue were improved, making a continuous line of smooth pavement from its western terminus to Bushwick avenue, and by way of Suydam street, one-half block distant, to Irving avenue. Manhattan avenue has been repaved with granite blocks on concrete from Grand street to Meeker avenue, making that avenue well paved its entire length.

The above are only examples of what has been done in this line.

One of the most notable of the new streets begun is De Kalb avenue, which has been repaved with asphalt from Fulton street to Clinton avenue. The street car company has repaved its track with granite blocks on a concrete base so that now this avenue, which was almost impassable except in the car tracks, is well paved its entire width and pleasing to drive over.

Other instances are Nostrand avenue, from Flushing avenue to Willoughby avenue, and Macon street to Prospect place; Patchen avenue, from Hancock street to Fulton street; South Third street, from Kent avenue to Union avenue; Reid avenue, from Broadway to Madison street; Gates avenue, Lewis avenue to Ralph avenue, and Fourth avenue, from Fortieth street to Sixtieth street. The repaving of this last avenue has entirely transformed it, as will be seen by the accompanying illustrations.

Where formerly the roadway was practically a rocky waste 60 feet wide it has now a smooth asphalt surface, with a park in the centre, 20 feet wide. The extension of this work north-erly to Twentieth street will make it one of the most beautiful streets in Greater New York.

The year 1902 has been remarkable for the fact that the mileage of cobblestone pavement has become less than 200 and the mileage of the asphalt brought above 100.

The liberal appropriation (\$1,200,000) for repaving made by the Board of Estimate and Apportionment, together with a

balance on hand in the bond fund and also an appropriation in the budget, enabled us to make repaving contracts in amounts as follows :

Asphalt	\$990,419 76
Granite	318,527 78
Medina sandstone.....	10,743 70
Curb and concrete.....	1,512 90
	\$1,321,204 14

ASPHALT PAVEMENTS.

One of the demands upon the present administration was to prepare asphalt specifications so that open competition might be had in bidding on all asphalt contracts.

After consultations with the engineers of The Bronx and the Department Chemist, my predecessor and myself formulated specifications, afterward approved by the Board of Estimate and Apportionment, by which any bids from responsible parties would be accepted when accompanied by samples of asphalt that would meet the chemical requirements of the specifications. The guarantee period of the pavement was reduced in all cases to five years. The minimum amount of bitumen in the wearing surface was increased from 9 to 9½ per cent., and a provision was made in the contract under which 20 per cent. of the entire amount of the contract was withheld for twelve months as a special guarantee. If the pavement be in good condition one year from its completion all the money due is to be paid to the contractor, the bond continuing in force for the full length of the guarantee period.

Under these modifications contracts were made with Cranford Company, the Brooklyn Alcatraz Asphalt Company, both of this borough; the Uvalde Asphalt Paving Company, the Green River Asphalt Company, both of the Borough of Manhattan, and the Interstate Paving Company, of Utica, N. Y. The two first named companies have been laying pavements for years and their work is well known. The bid of the

Uvalde Asphalt Paving Company was accepted, as they proposed to use the well-known Trinidad asphalt. The Interstate Paving Company offered the "Obispo" California asphalt. Their asphalt was analyzed by the Chemist of this Bureau and found to be almost identical with the Alcatraz samples. It was also pronounced to be equal to Alcatraz asphalt by Mr. A. W. Dow, Inspector of Asphalt and Cement in Washington. Pavements laid by this company in Utica were also examined by the Chief Engineer of this Bureau, and while not having been laid long enough for one to give a final opinion as to their value they were in good condition.

In the light of these facts contracts were awarded to the Interstate Paving Company for the streets where it was the lowest bidder.

The Green River Asphalt Company was the lowest bidder on one street only. The material proposed was Kentucky rock asphalt. The contract was awarded this company because it was believed that the material would make a good pavement and also because it was desired to give their material a fair trial.

Pavements have been laid with all the above materials. They are now, as might be expected, in good condition. The asphalts have all fulfilled the requirements of the specifications as to quality, but experience alone can demonstrate their permanent value. No chemical determination is sufficient to positively tell whether an asphalt will make a perfect pavement. Time and use only can demonstrate that.

It is considered, however, that the interests of the City are properly safeguarded in the retention of the 20 per cent. of the entire amount of the contract for one year and the bond of two surety companies in the sum of, approximately, one-third of the contract price, to run for five years, even if the payment should entirely fail, an event which is certainly not expected.

On one street a large portion of the pavement was found to contain an average of 8.67 per cent. of bitumen when analyzed by the Bureau Chemist, when the specifications

require a minimum of 9.5 per cent. This portion of the pavement was ordered by me to be replaced with satisfactory material. The contractor refused to do this, claiming that analyses made by a reputable chemist employed by him showed the material to be within the contract requirements. All payments for the asphalt have been held back and the contractor has begun a suit against the City to compel payment.

On streets paved subsequently the asphalt has literally conformed to the specifications except in a very few instances.

The cost of asphalt pavement in 1902, including five inches of Portland cement concrete, has averaged \$1.79 per square yard. The same work in 1900 and 1901 cost \$2.83.

Three contracts were made for repaving streets with steep grades with asphalt blocks. The price for this was \$2.22½ per square yard.

ASPHALT REPAIRS.

The problem of making repairs to asphalt pavements is one that the officials of different cities have been trying to solve for many years. There have been three different methods adopted where repairs have been made by public contract.

1st. By paying a specified sum per square yard for the entire area of the pavement, no matter how much work was actually done.

2d. By paying so much per square yard for pavement actually laid while making the repairs.

3d. By paying so much per cubic foot for material actually used.

The first method is the one that has been adopted in many cities and it was in use in Brooklyn until 1901.

When the contractor is asked to bid on such a method of repairing pavements, he must guess on how much work and material he will be liable to use. He can have no data for an estimate even. When he guesses, he will guess on the safe side, and the City must pay the difference between what it actually cost and what he guessed it would cost. This, of

course, is not an engineering nor a practical way of getting at this kind of work.

The second method pays for the work actually done, but demands measuring the area of every patch laid in the repairing work. These patches are often small and always very irregular in size, so that it requires a great deal of labor to get the exact area.

The third method is, to my mind, the simplest and best, as the amount of the material in the carts delivered on the street can be accurately and easily measured, and the contractor is paid for the exact amount of material he uses, and he can estimate very closely in advance how much labor it will require to lay this material.

The officials in Brooklyn in 1901 adopted this latter method of making the repairs. The first contract expired on July 12, 1902, after which a contract was made by the same method for keeping the streets in repair until January 1, 1903. In this way it has been possible to show the actual cost for repairing on each street maintained. By the former method, when fifteen or twenty or more of the streets would be arranged in the same group, one price would apply to all streets, and if a street had little or no repairs made on it, the same amount would be charged up against it as against the street which had a large amount of repairs made.

The total cost of maintaining the asphalt streets out of guarantee during 1902 was \$40,417.76. The total cost to the City was \$36,167.36, the difference being paid by the street car companies for their portion of the work.

The average cost per square yard for the 698,566 square yards maintained was 5.79 cents. This includes all of the streets maintained. If, however, the streets having street car tracks be excluded from the total, the average cost per square yard for streets without street car tracks is 4.18 cents. The average cost per square yard for all streets on which street car tracks are laid was 17.8 cents. These figures show very clearly the effect of street car tracks upon asphalt pavement.

The average cost per square yard for all pavements maintained by the previous method under the previous contract was 15.93 cents.

I have prepared a table which shows the average cost per yard for the repairs of 1902, the streets being arranged in groups, according to the length of time they have been maintained after the expiration of the guarantee period. The period of guarantee in all cases was five (5) years. In this table it is shown that the pavements that have been out of guarantee for one year have cost on the average 2.27 cents per square yard, but of these streets ten have had no repairs made at all. A few bad streets bring the cost up to what it did. The streets that have been out of guarantee two years have cost on the average 3.01 cents, although fifteen of the streets required no repairing at all.

On the different streets repaired last year eighteen have cost more than 15 cents per square yard. These eighteen streets include a total of 71,017 square yards, and it cost to maintain them \$18,453.85, or an average of 26 cents per square yard. If these 71,017 square yards were taken from the total amount maintained, the average cost per yard would be reduced to $3\frac{1}{2}$ cents per square yard, as against 5.79 cents, the actual cost.

A study of the cost of these different streets will enable me to make recommendations as to which of these streets, if any, should be repaved rather than spend an excessive amount for repairs. If a street has a bad foundation a large amount spent in maintenance is not permanent, as the failure of the foundation causes the failure of a good asphalt pavement; while on the other hand, if the foundation be good, the excessive repairs of this year may be made up by the reduced cost for another year.

STONE PAVEMENTS.

Quite a radical departure has been made this year in the construction of stone pavements. It has been decided on all

repaving work to lay stone pavements on a concrete foundation, with tar and gravel or Portland cement joints; but one street repaved by contract the past season has been laid on a sand foundation, and that was a continuation of a street already laid on sand. On original improvements, wherever the assessed valuation of the adjoining property will permit it, it has also been decided to lay stone pavements on a concrete foundation. This, while being a little more expensive at first, it is believed will be true economy in the end, as the pavement will be kept in repair with very little expense and its durability will be increased by this improved method of laying. It has also been decided to lay no more Belgian blocks. The Belgian blocks which are in pavements to-day are what might be called a corruption of the cubical blocks used in Europe. Cubical blocks make a very good pavement, but the present Belgian blocks, instead of being cubes, are truncated pyramids, so much have they fallen from the original shape. On account of their shape it is almost impossible to maintain the contour of the pavement laid with these blocks, and no matter how much care is used in the construction, the pavement soon becomes wavy and uneven. It certainly seems to me a wise policy to discontinue the use of these blocks.

When the improved form of granite pavement was adopted it was found necessary to fill the joints with some impervious material, so as to prevent the water from reaching the base. In this locality this material has always been gravel, with its interstices filled with a composition composed principally of coal tar. In Boston and other Massachusetts cities, a filling composed of one part of Portland cement and one part of sand has been used with success. Two streets in this borough during the past year were treated in this way. The result was not quite as satisfactory as was hoped; but I think, with the experience gained in the construction of these two streets, we will in another year get satisfactory results. I shall therefore continue the use of this material as a joint filling the coming season.

The most noted repaving with stone laid this year has been the closing in of the two gaps on Third avenue, which makes a continuous granite pavement from Atlantic avenue to Sixtieth street.

On account of the scarcity of blocks, the price of the granite pavement has been a little higher than in former years. The average cost per square yard, including foundation, has been about \$3.15. The details of the stone pavements are shown in the attached tables.

MEDINA SANDSTONE.

In the western part of this State is found a paving material which has been used very extensively in the cities of Cleveland, Buffalo and Rochester. It is a sandstone, and from its locality receives the name of "Medina." It is not as hard as granite, but wears more smoothly and evenly, and certainly is a desirable material. It is the only material used for stone block pavements in the cities just mentioned. Until the past year it has been deemed impossible to bring this material to this city and compete with granite. Upon the representations of the owners of some of this material that their price would be about equal to that of granite pavement, two streets were ordered paved with Medina sandstone—High street, between Jay and Bridge streets, and South Third street, between Kent and Wythe avenues. These pavements have been completed and the results justify our action in using this material. While these blocks will wear somewhat faster than granite, the wear will be in a different manner. It will be over the entire surface, instead of at the edges and corners, as with granite, so that after the pavement has been laid for some time it is really more satisfactory than when first laid.

The material comprising the blocks is such that, although the pavement is smooth, it is not slippery, like granite. I shall be glad to see more pavements laid with this material the coming year.

The cost of this pavement was \$3.19 per square yard.

WOOD PAVEMENTS.

Wood as a paving material has been in use in this country and in Europe for many years, but, as a whole, with very little success. During the last five or six years, however, the City of Indianapolis has been laying improved wood pavements, the blocks having been treated with creosote oil in order to increase their lasting properties. Within the last two or three years a new method of preparing blocks has been used. This consists of treating the blocks first with creosote oil and then with a certain amount of resin, the quantities in each case being practically 10 pounds each of creosote and resin per cubic foot. The object of the resin is to prevent the evaporation of the creosote, which is a volatile substance. Pavements laid with wood, treated in this way, have been in use in Boston for two or three years with satisfactory results. During the past season the United States Wood Preserving Company, of No. 29 Broadway, New York, who use this material, agreed to lay one block of their pavement on State street, between Hicks and Henry streets, if the City would prepare the foundation. Accordingly a contract was made for the setting of the curb and laying a concrete foundation for these blocks, and the United States Wood Preserving Company, in accordance with their agreement, laid the pavement. While this pavement has not been down long enough to permit any one to form an opinion of its merits from this one case alone, I am satisfied that the pavement will be durable and that it will come into use as a paving material, and I shall be glad to see it tried on a larger scale the coming season, on a street where it will receive heavy traffic.

LOCAL IMPROVEMENTS.

When a street is first paved the entire cost of the work is assessed against the abutting property, and this proceeding is generally termed a local improvement. Work of this character amounting to \$476,421.27 has been put under contract

during 1902. The larger portion of this was authorized in 1901, but twenty-four contracts for local improvements were made which were ordered in 1902.

Resolutions ordering work on twenty-nine different additional streets were also passed in 1902. Surveys are now being made for the improvements and the contracts will be executed previous to April 1. The estimated cost of these improvements is \$662,015.

The most important of the original improvements contracted in 1902 were Third avenue, paved with asphalt from Sixtieth street to the Shore road, a distance of about $2\frac{1}{4}$ miles; and Pitkin avenue, paved with granite from Snediker avenue to Linwood street, a distance of about 1 mile.

CHARACTER OF WORK.

On account of the great volume of work that was ordered and put under contract by this Bureau in July and August it was impossible to obtain inspectors and engineers to supervise the work in a satisfactory manner, and considerable adverse criticism was made by other departments upon certain portions of the work. The concrete on one street was found to be defective, and upon my order it was taken up and relaid with satisfactory material. On some other streets quite a large portion of the concrete laid also had to be taken up. On one granite paved street, after the pavement was laid, the concrete base was found to be defective. The pavement itself was good and the concrete deemed sufficiently strong to act as a foundation, although not up to the specifications, and it was not deemed necessary to take up the entire pavement and relay the concrete, but a reduction in the price of the concrete was recommended. This street is now in process of adjudication. Toward the latter part of the season and while most of the work was being done, the system of inspection and supervision was perfected, and almost no adverse criticism was made, and I am satisfied that the work done was good and satisfactory.

I am also satisfied that the bad work performed was discovered and corrected in time, so that the interests of the City were protected and the contractors fully impressed with the idea that it was the best policy for them to live up to the requirements of their contracts.

STREET SIGNS.

During the past season a systematic effort has been made to supply this borough with street signs. There is probably no one thing which bothers a stranger so much as the inability to determine the names of streets. Early in the season a bond issue was authorized by the Board of Estimate and Apportionment to provide for illuminated signs. At first the idea was to have boxes constructed upon the electric light poles and upon the gas lamp-posts, and have these boxes illuminated from within either by gas or electricity, as the case may be. After a time, however, a proposition was made by a gentleman who thought he could obtain the same results by a box constructed with reflectors so that the light outside could be made to illuminate the interior of the box. Proposals for such boxes were advertised and bids received. After samples had been erected in a number of places in this borough, it was ascertained that the length of the lamp arm on the electric light posts was so great that this system could not be adapted to our present electric or lamp-posts, and consequently all bids were rejected.

It is now proposed to advertise for as many of the boxes illuminated by gas and electricity direct as there are posts in the desirable locations. It is expected that these can be erected in the early part of the spring of 1903.

There was also let in the fall a contract for the erecting of 4,000 blue enameled signs at the different corners. Twenty-seven hundred of these have been put up and the remainder will be in position in a few weeks. Those that have been put up are very satisfactory and will give good results. It is now proposed to erect these same signs on an iron arm connected

with existing posts wherever necessary. It is also proposed to erect colored glass signs on all of the Welsbach lights if some other type is not provided. Also to provide the ordinary gas lamp with glass signs.

It is expected that all of this will be brought about the coming season so that at the end of the year 1903 it will be possible to find street signs at every intersection where there are any facilities for their erection.

SIDEWALKS.

The sidewalks of this borough have for many years been in a very bad condition. This is probably due to a great extent to the condition of the pavements, but even on our best residence and business streets the sidewalks are often bad, although attempts are constantly being made to have them repaired. Early in the spring special inspectors were sent up Fulton street, Myrtle avenue, Flatbush avenue and other streets to examine the sidewalks and serve notice on the property-owners to repair them where necessary.

In most of the cases the property-owners responded and the sidewalks on these streets are now in a very good condition. A further attempt will be made the coming year to extend this work over a larger portion of the borough and an endeavor made to have the sidewalks put in at least a safe condition. During the past year 6,587 notices to repair sidewalks have been served by inspectors from this Bureau, and during the coming winter preliminary notices will be served on as many streets as can be covered.

The work actually performed during the past season is as follows:

Bluestone Flagging.

Laid by public contract.....	60,127 sq. ft.
Laid by private contract.....	162,000 "
Reflagging done.....	3,874 "

Concrete Sidewalk.

Laid by public contract.....	17,452 sq. ft.
Laid by private contract.....	628,060 "
Laid by private contract on streets not legally open and not under the jurisdiction of this Department.....	466,815 "

Concrete Curb.

Laid by private contract.....	51,055 lin. ft.
-------------------------------	-----------------

There was also constructed by public contract 5,624 linear feet of board fence, which has been in charge of the sidewalk inspectors.

During the year petitions have been received as follows:

For new sidewalks.....	560
For fencing vacant lots.....	217
For grading lots.....	26

MAP ROOM.

On account of the large amount of repaving ordered, as well as the local improvements, the work of the map room has increased very much over the previous years. Where one man in former years has been able to do nearly all of the work, this year it required three, and sometimes four. In addition to the routine work of the room, the following special work has been done:

Assessment Maps and Lists in Duplicate for Board of Assessors.

Grading, paving, etc.....	15
Laying sidewalks.....	63
Fencing vacant lots.....	20
Grading lots.....	5
Total	103

Plans and Profiles for New Work.

Paving, grading, etc.....	25
Repaving	110
Total	135

Miscellaneous Plans, Diagrams, etc.

Proposed change of grade.....	4
Profile in duplicate for assessors.....	5
Preliminary plans and estimates for repaving.....	11
Curb profiles	15
Flagging and fencing diagram for inspectors.....	284
Miscellaneous plans.....	12
Total	331

I would say here that all assessment maps and lists have been forwarded to the Finance Department for all original improvements on which final estimates have been given.

In this connection I would like to call your attention to the unsafe condition of the map room, where a large number of public records are kept which are of great importance. These records consist of original street opening maps, assessment lists of street improvements running back in some instances as far as the year 1812, and numerous other original maps and documents which if once lost could never be replaced. The building in which these offices are located is not fireproof, and in case of a fire all of these records might be destroyed and their loss would be incalculable. I think that I could not put this matter too forcibly to you, and if it is proposed to construct a new Municipal Department Building, I would suggest that special attention be given to the importance of preparing a place for these records.

SURVEYS.

During the past year, besides making the surveys for the construction work, the Survey Division has made a great many preliminary estimates for street improvements for the different local boards. Comparatively few of these have passed the Board of Estimate and Apportionment, and so in a certain way this work seems to be without return.

During the past season the following reports were made:

	NUMBER.	COST.
Regulating and grading.....	47	\$449,300 00
Grading and paving, asphalt.....	74	1,948,400 00
" " 	23	576,000 00
" granite blocks.....	55	1,636,100 00
" " 	1	2,000 00
" trap blocks.....	8	204,500 00
" Belgian blocks.....	2	7,900 00
" brick.....	3	60,200 00
" macadam.....	19	367,700 00
Curbing and guttering.....	5	6,900 00
Laying crosswalks.....	1	15,500 00
	238	\$5,274,500 00

All petitions for work of the above character that have been sent to this office have been reported on.

THE LABORATORY.

During the previous administration the Chemist of this Department was transferred to the Borough of Manhattan and made Chemist for the Department of Highways for the entire city. Early in 1902, however, he returned to this Bureau and a laboratory was fitted up for his use in Room 51 of this building. Construction work started up in such volume immediately after his transfer that the plans for fitting up the laboratory have not been entirely carried out, although sufficient apparatus has been installed to allow all work to be done. This work is under the charge of Mr. W. H. Broadhurst, who has had experience in analyzing asphalt, testing cements, etc., in connection with highway work during the last six years.

While the Chemist makes tests for the different Bureaus, the

greater portion of them is for this Bureau. It consists principally in analyzing samples of asphalt for paving and also samples of the wearing surface on the streets, as well as the making of tests of the cement for the concrete used as a base for the pavements. These tests have been very carefully, and since the laboratory has been organized, systematically made. Samples of cement are taken from each street on which work is being done and tested every day. On asphalt work samples of the wearing surface are also taken every day and analyzed, so that if at any time the requirements of the specifications are not lived up to the contractor can be notified within 24 hours, at least, and make any desired change in the mixture.

The work of the Chemist is of the utmost importance, as the contractors know that a close record is being kept of all that is done and so are more careful in their endeavors to live up to the specifications. During the year he has analyzed 25 specimens of asphalt and 342 samples of the asphalt wearing surface taken from the street, and he has also broken over 10,000 briquettes of cement. His report gives a description of the laboratory and his work in detail.

GENERAL REPAIRS.

The repairs of all of the paved streets except asphalt, as well as the dirt roads, has, during the past season, been under Assistant Engineer E. J. Fort, and I commend to your careful reading his report, which is hereto attached. It is a simple, modest document, but it gives in plain figures the amount of work accomplished by his division.

The work of repairing streets, especially cobblestone streets, is, as the Assistant Engineer says, not calculated to raise much enthusiasm among the men doing the actual work or those who have it in charge. This Assistant Engineer seems to have inspired a spirit of enthusiasm among his men and has created an *esprit de corps* which is seldom found in a body of men of that class. He has carried on this work with energy and so

systematized it as to get results such as has not heretofore been obtained. His men are organized in what are called "repair gangs" and "connection gangs." The repair gangs are organized for the purpose of making repairs when the entire street or a considerable portion of it is to be entirely repaved with the existing material. The connection gangs are organized for the purpose of repaving holes made in the different kinds of pavements, except asphalt, by plumbers and by the different corporations. For this work the plumbers and corporations pay a fee which covers the cost of this work. Out of the fund created by these fees there were paid in wages for the different gangs \$34,474.63. In making the repairs, all material is bought by contract except when very small amounts are required. The broken stone used in the repair of macadam roads is delivered upon the street where used, saving one hauling.

I wish to call your attention to the fact that nearly all of the work done on macadam roads during the past season was resurfacing the entire street to a depth of 4 inches with trap rock. This can be considered as practical repaving and will be a permanent repair. The tables attached to the Assistant Engineer's report show the cost of the work in detail.

I wish further to call your attention to the fact brought out in the report that the pavements under the charge of this Bureau amount to practically as much as the combined pavements of the boroughs of Manhattan and The Bronx, yet for the year 1903 there was allowed the Borough of Manhattan, simply for repairs and renewals of pavements, \$360,758, and for the Borough of The Bronx for labor, maintenance and supplies, \$500,000, or a total of \$860,758, while all this borough, with its greater mileage of pavements and certainly a larger mileage of unpaved streets, was only allowed \$347,944.25. It must also be considered in this respect that the pavements of Manhattan and The Bronx are in better condition than in this borough, and that if it is expected that our pavements are to be brought up to the proper standard for

pavements of their character even, the yearly appropriation must be doubled at least for some years to come. You will be gratified, however, at the statement made by the Assistant Engineer that he will be able at the close of this year to have all streets in a fair condition. The mileage of cobblestone pavements has been reduced about 23 miles during the past season, and it is hoped that the coming season will reduce it 35 more, so that we will not have more than 150 or 160 miles of cobblestone pavement on the 1st of January, 1904, and this will be in a decent condition. If this be achieved, the streets of this borough will be in a better condition than they have ever been since it has had any great amount of pavement.

I wish to emphasize the fact that a large amount of machinery has been purchased for the use of this division in the country towns upon the dirt roads and the macadam streets. It is proposed to use one of the steam rollers in connection with the crusher during the winter for the purpose of crushing the old cobblestones for use in making concrete the coming year. This will not only give employment for many of our best laborers, whom it would otherwise be necessary to discharge, but it will also save the cost of hauling away and getting rid of these useless stones. As brought out by the Assistant Engineer in his report, the cost of disposing of all refuse and waste is increasing yearly, and anything that can be done to reduce the quantity of this waste is an economical action. It is intended to pave quite a number of streets with granite on a concrete base by our repair gangs the coming year and thus utilize all this broken stone in the concrete.

Among the machinery purchased are two sand-sprinkling machines which are certainly unique in the equipment of a highway bureau. The amount of smooth pavements has so increased that it is necessary after sleet storms to provide about the city through routes along which traffic can swiftly and easily pass. This is accomplished by sprinkling the pavement with sand. Formerly this was done by hand and it was a slow operation. These machines are fed by trucks bringing the

sand from the nearest yard, and in four or five hours many miles of pavement can be sprinkled. The importance of doing this particular work quickly cannot be overestimated, and for this reason the machines are especially valuable.

Mention is also made of cleaning the streets in the suburban wards. It is proposed soon after April 1 to put a sufficiently large gang to keep the streets clean in Flatbush, Sheepshead Bay, Coney Island, Bath Beach, Gravesend and Bay Ridge, and have them constantly at work during the entire season. These villages enumerated would be quite large cities in many States, and it is only just to them that their streets be kept clean, even if only improved with broken stone, for cleaning which there is no appropriation made in the Street Cleaning Department. Road machines have been purchased with the view of keeping the dirt roads in these wards in good condition. With the knowledge gained by the Assistant Engineer of the needs of the different wards, it is expected with the new machinery that the streets in the different localities mentioned will be kept in a better condition than ever before.

I wish also to mention especially the bridge constructed over Garretson's creek, on Avenue U. This structure was authorized by the Board of Estimate and Apportionment on May 16. Plans and specifications were immediately prepared and the contract awarded to Barth S. Cronin on August 23. Work was at once begun and is now nearly completed. This bridge fills a long-felt want, as it connects two sections of the borough divided by this stream. The character of the work and material is mentioned by the engineer in charge of construction, and I can fully bear him out in what he says.

CORPORATION WORK.

All work performed by the different corporations in the various streets is supervised by this Bureau. The different street car companies, the gas company, the electric-light companies and similar corporations are constantly tearing up our streets

in making repairs to their existing property or in constructing new.

Supervision is necessary in order to know that the streets are obstructed as little as possible and that the pavements are properly replaced. The cost of the inspection is borne by the respective companies.

Table No. 9 shows the amount and character of work done by these companies in detail.

THE TOPOGRAPHICAL BUREAU.

Previous to 1902 all the topographical work of the entire city was done by one bureau, with its headquarters in the Borough of The Bronx, but having a branch in Brooklyn for local work. The change in the Charter decentralized the old bureau and brought the work of each borough under its Borough President. In the resulting reorganization, men were sent from the Brooklyn branch to the other boroughs and new men came here. This caused more or less confusion, and this confusion was augmented by the differences in the salaries of the individuals, as position and character of work seemed to be no criterion for fixing a man's compensation. This latter matter was partially adjusted last May, and if the pending salary increases are passed, there should be no further trouble from that source.

During the year the boroughs of Queens and Richmond organized new bureaus entirely. In doing so they drew freely upon existing organizations in both Brooklyn and the Bronx, and so still further contributed to the unsettled conditions.

The Bureau in Brooklyn has been under the direct charge of Assistant Engineer George J. Bischoff, and he has labored hard and earnestly to bring his force into good working order.

To his industry is due the fact that notwithstanding the hindrances mentioned above, he has accomplished more the past year than has been done in previous years, as can be seen by reference to his report, hereto attached.

Despite the fact that the Corporation Counsel has called for

158 maps in 1902, as against 90 in 1901, this Bureau is not so far behind in its work as it was on January 1, 1902. If the vacancies caused by the frequent resignations could have been promptly filled, a much better showing would have been made. As it is, the work is practically only about three months behind the requests of the Corporation Counsel.

I think it can be safely said that unless the demands made upon this Bureau the coming year are unprecedented, on the 1st of next January its work will be as nearly up to date as it is practical to have it.

Attached are several appendices and tables, as follows, the tables being under separate cover :

Appendix A.—Distribution of cost of repaving by City at large since January 1, 1898, according to new districts, of local improvements.

Appendix B.—Distribution of cost of repaving by City at large since January 1, 1898, by wards.

Appendix C.—Distribution of cost of repaving by City at large since January 1, 1898.

Appendix D.—Distribution of cost of local improvements during 1902 by local districts.

Table No. 1.—Areas, lengths and percentages of the various kinds of pavements in the Borough of Brooklyn, New York, January 1, 1903.

Table No. 2.—Mileage and percentage of the various pavements in the City and Borough of Brooklyn, from January 1, 1880, to January 1, 1903.

Table No. 3.—Areas of the different wards of the Borough of Brooklyn.

Table No. 4.—Amount of asphalt laid on completed contracts during the year ending December 31, 1902.

Table No. 5.—Amount of stone pavement laid on completed contracts during the year ending December 31, 1902.

Table No. 6.—Streets graded, curbed, guttered and macadamized on contracts completed during the year ending December 31, 1902.

Table No. 7.—Streets upon which work was in progress December 31, 1902.

Table No. 8.—Streets upon which contracts were in force and work not begun December 31, 1902.

Table No. 9.—Work done by corporations.

Table No. 10.—Cost of maintaining asphalt pavements during 1902.

Table No. 11.—Improvements authorized by the Board of Estimate and Apportionment during the year 1902, contracts for which have not yet been made.

Table No. 12.—Diagram showing mileage of pavements from January 1, 1880, to January 1, 1903.

In closing this report I wish to call your especial attention to the fact that the work performed by this Bureau could not have been accomplished without the ready assistance of all its members. Many men have worked hours of overtime cheerfully, because they recognized that the needs of the Bureau required it. While it is not intended nor desired that any member of this Bureau should work more hours than is required in other departments, it is a pleasure to find the spirit of willingness to do so when necessity requires it.

To yourself and the Borough President I must express my earnest thanks for the confidence shown in me and for your hearty co-operation with me in all my efforts.

Respectfully submitted,

GEORGE W. TILLSON.

Chief Engineer.

APPENDIX A.

Distribution of Cost of Repaving by City at Large Since January 1, 1898, According to New Districts of Local Improvements.

DISTRICT.	NAME.	AMOUNT EXPENDED.	
		1898-1901.	1902.
4th	The Heights	\$239,736 00	\$132,261 53
5th	Bedford	217,216 30	188,946 80
6th	Bay Ridge	57,858 61	134,138 05
7th	Red Hook	131,013 95	130,911 37
8th	Prospect Heights	367,861 40	227,196 65
9th	Williamsburg	140,631 05	144,570 92
10th	Flatbush	318,890 35	274,477 19
11th	Bushwick	107,679 40	167,416 66
	Total	\$1,580,887 06	\$1,399,919 17

APPENDIX B.

Distribution of Cost of Repaving by City at Large Since January 1, 1898, by Wards.

DISTRICT.	1898-1901.	1902.
1st .....	.....	\$22,891 80
2d	\$32,601 94	.....
3d	42,192 15	23,827 68
4th	30,451 21	5,679 20
5th	35,565 71	22,231 00
6th	98,924 99	57,631 85
7th	97,105 98	48,675 75
8th	57,858 61	131,850 05
9th	161,255 28	29,400 77
10th	114,759 86	73,037 67
11th	27,749 92	24,729 00
12th	16,254 09	57,873 70
13th .....	.....	29,506 60
14th	29,799 56	.....
15th	33,971 12	70,848 79
16th	45,298 53	32,527 60
17th	31,561 84	41,194 53
18th	34,841 81	61,044 36
19th	41,038 12	26,632 10
20th	40,914 11	77,799 50
21st	79,072 20	84,132 35
22d	137,942 09	95,267 38
23d	110,927 18	87,237 76
24th	133,489 77	100,169 70
25th	47,328 40	68,877 29
26th .....	.....	14,132 40
27th	64,784 43	41,914 95
28th	8,053 16	50,324 95

DISTRICT.	1898-1901.	1902.
29th	\$27,145 00	\$18,192 44
30th .....	.....	.....
31st .....	.....	2,288 00
32d .....	.....	.....
Total	\$1,580,887 06	\$1,399,919 17

APPENDIX C.

Distribution of Cost of Repaving by City at Large Since January 1, 1898.

DISTRICT.	1898-1901.	1902.
1st	\$48,808 76	\$57,793 43
2d	98,618 86	30,944 90
3d	92,308 38	50,573 20
4th	122,142 15	64,930 34
5th	27,307 96	42,020 20
6th	67,766 19	81,996 26
7th	57,858 61	147,544 05
8th	114,759 86	65,987 67
9th	16,254 09	70,413 47
10th	68 664 03	97,751 25
11th	212,011 75	21,638 25
12th	87,185 62	81,861 38
13th	45,987 60	94,589 77
14th	49,344 92	27,747 55
15th	45,208 53	36,042 60
16th	79,006 66	90,704 49

DISTRICT.	1898-1901.	1902.
17th	\$64,361 82	\$65,410 56
18th	175,521 87	118,362 14
19th	82,746 12	78,733 71
20th	24,933 28	47,339 05
21st .....	.....	27,534 90
Total	\$1,580,887 05	\$1,399,919 17

APPENDIX D.

*Distribution of Cost of Local Improvements During 1902 by
Local Districts.*

DISTRICT.	NAME.	AMOUNT.
6th.....	Bay Ridge.....	\$197,615 93
8th.....	Prospect Heights.....	10,419 66
10th.....	Flatbush.....	87,281 79
11th.....	Bushwick	181,103 89
	Total	\$476,421 27

OFFICE OF THE PRESIDENT OF THE
BOROUGH OF BROOKLYN,
CHEMICAL AND PHYSICAL TESTING LABORATORY,
JANUARY 1, 1903.

Mr. GEORGE W. TILLSON,

Chief Engineer, Bureau of Highways:

SIR—I beg to submit the following report of the work of testing materials performed in the Chemical and Physical Testing Laboratory during the year 1902. A summary of the number of samples examined is as follows:

Samples of asphalt submitted with bids.....	121
Samples taken from work during construction—	
Hydraulic cements.....	678
Asphalt surface mixtures.....	342
Binder mixtures.....	135
Miscellaneous.....	35
Total	1,311

During the early part of the year the old laboratory was enlarged and remodeled. New apparatus was installed, temporary deskwork and shelving erected and the work of testing was immediately begun without waiting for the erection of permanent deskwork, hoods, etc., as the work of laying asphalt had already commenced. Some inconvenience was occasioned by this arrangement, but without sacrificing the accuracy of the work. During the winter permanent deskwork, cabinets and hoods will be installed and the equipment permanently organized. The electric current has been utilized so far as possible for operations where heat or steam is required, and its adaptation to modern laboratory practice, where constant and uniform temperature are required, has been found to be

eminently practical. The apparatus includes three electric coil steam baths, one electric air bath with controlling rheostat for obtaining uniform temperature up to 500 degrees Fahrenheit, two electric flat-surface stoves.

An important feature in the construction of the new laboratory is the apparatus for artificial ventilation. A No. 4 Sturtevant exhaustor, operated by a 1 H. P. electric motor, removes all fumes and odors through a system of flues—the exhaust being made available through numerous offsets carried up through the workdesk cabinets. This arrangement has been found to work admirably. The several modern and up-to-date features above mentioned have increased the efficiency of the laboratory in a marked degree.

Supplementary to the laboratory routine, an important part of the work of this office consists of the inspection of asphalt plants during the progress of the manufacture of the pavement mixtures. It is readily apparent that the character of the asphalt or bitumen may be greatly altered by admixture with overheated sand. The treatment which these unstable asphalt hydrocarbons are required to undergo at this stage in the manufacture of the mixture is a severe test, even at the usual temperature of 325 degrees Fahrenheit. Each sand particle becomes coated with a thin film of asphaltic cement, which is constantly exposed during mixing to the air. If these sand particles reach a temperature of 350 degrees Fahrenheit, or 400 degrees Fahrenheit, or higher, caused by overheating in the drums, a part of the asphalt oil, or "active" bitumen is driven off and another portion is converted into asphaltene. The percentage, soluble in petroleum naphtha, of the pure bituminous matter, will therefore be considerably less after it has been mixed with overheated sand. Many failures of asphalt pavements in the past are traceable directly to overheating. There are, however, many other causes for failure in laying asphalt. Indeed, the success of this class of construction depends on numerous seemingly unimportant factors, and requires more attention to detail than any other. A few of the

more common errors in the manufacture of an asphalt mixture are :

1. Deficiency in the percentage of bitumen caused by neglect to properly proportion the mixture, or by the introduction of sediment into the asphaltic cement by working the tank too low.
2. Too stiff a mixture caused by overheating.
3. Too stiff or too soft a mixture caused by failure to properly proportion the amount of flux to the asphalt or the asphaltic cement to the sand and dust.
4. Soft spots caused by the failure of the petroleum residuum (flux) to completely dissolve or "blend" with the asphalt.

If, on inspection, any of these or other discrepancies exist, the contractor is notified to stop the work, samples of the ingredients, before mixing, and of the mixture as it is brought on the street, are taken, the error is located, and the contractor notified to make the necessary change in formula. There is, hence, abundant opportunity to detect errors and advise against failures, especially in the case of new and inexperienced contractors. With data, covering the points above enumerated at his command, the engineer is enabled to intelligently criticise the work, point out errors and dictate proportions if necessary.

Guarantee clauses in contracts do not obviate the inconvenience to taxpayers, dependent on the relaying of pavements or parts of pavements which prove failures, nor do they obviate the necessity for the City to enter into contracts for the maintenance of pavements which disintegrate rapidly, immediately after the guarantee period has expired.

Of nearly equal importance with the asphalt wearing surface is the concrete foundation. Portland cements only have been used where this class of construction is called for. The average

tensile strength developed by the several brands used is given in the accompanying table.

The work accomplished in the Cement Testing Laboratory has been very satisfactory, over 10,000 briquettes having been broken during the year. This, of course, includes the work done for all the bureaus. Samples of asbestos pipe covering, lubricating oils, iron and steel, etc., have been received from the several bureaus for examination. There are many other materials used on public work which ought properly to be subjected to analysis or test. The increasing value of the laboratory in this direction will be readily apparent.

Respectfully submitted,

W. H. BROADHURST,

Chemist.

Table Showing Results of Tests of Hydraulic Cements Used in Street Construction, Borough of Brooklyn, During 1902.

BRAND.		1 DAY NEAT.	7 DAYS NEAT.	7 DAYS MORTAR (3-1.)
" Invicta " (Portland)...	150 lots averaged.	315	490	202
" Whitehall " " ...	52 "	353	722	235
" Trowel " " ...	50 "	288	791	220
" Alsen " " ...	41 "	313	828	248
" Phoenix " " ...	40 "	223	602	278
" Atlantic " " ...	39 "	269	486	180
" Saylor's " " ...	11 "	186	711	223
" Lehigh " " ...	10 "	359	759	231
" Northampton " " ...	7 "	185	753	207
" Mittelddeutsch " " ...	7 "	246	488	194
" Helderberg " " ...	7 "	276	612	218
" Valley " " ...	5 "	359	704	215

BRAND.		1 DAY NEAT.	7 DAYS NEAT.	7 DAYS MORTAR (3-1)
" Hanover " (Portland)...	5 lots averaged.	229	500	179
" Krause's " " ...	5 "	423	814	305
" Hoexter " " ...	4 "	195	494	249
" Luneburg " " ...	3 "	328	461	257
" Stettin " " ...	3 "	246	417	233
" Condor " " ...	3 "	272	576	252
" Iron Clad " " ...	2 "	409	559	310
" Nazareth " " ...	2 "	259	640	293
" Royal Crown " " ...	1 lot averaged.	299	318	162
" Atlas " " ...	1 "	438	777	351
" Teutonia " " ...	1 "	274	555	269
" Alpha " " ...	1 "	313	871	339

Mortar (3-1) = Standard Crushed Quartz..... 3 parts (by weight).
 Cement 1 "

BUREAU OF HIGHWAYS,
BOROUGH OF BROOKLYN,
DIVISION OF STREET REPAIRS,
JANUARY 12, 1903.

Mr. G. W. TILLSON,

Chief Engineer, Bureau of Highways:

DEAR SIR—In compliance with your directions I beg to submit, herewith, a report of the work done by this division of the Bureau during the year ending December 31, 1902:

Pavement Relaid and Repaired by Repair Gangs.

	MILES.	SQUARE YARDS.	COST.	COST PER YARD.
Granite pavement.....	3.35	25,481	\$12,559 54	.49
Belgian pavement.....	2.01	10,905	5,566 28	.51
Cobblestone pavement.....	28.29	191,506	69,626 23	.363
Macadam pavement.....	13.39	227,057	40,926 00	.18
Total.	47.04	454,949	\$128,678 05	....

In addition to the above the following repairs have been made where necessitated by openings made by plumbers, corporations and others, and where complaint has been made that the pavement is in a dangerous condition.

Water and sewer connection openings repaved.....	5,628
Gas and electric light connection openings repaved.....	1,613
Holes complained of by citizens repaved.....	605
Holes complained of by Police and Street Cleaning Departments repaved	3,147
Holes, miscellaneous, repaved.....	3,736
Total square yards.....	67,822

Several thousand holes over connection openings and in asphalt pavements have been made safe. In addition to the above many miles of dirt roads in the suburbs were repaired and cleaned, 35.4 miles of macadam roads were cleaned and repaired, and many of them in the more thickly populated districts were frequently cleaned. More than 30 miles of macadam roads were sprinkled several times daily throughout the season and kept almost entirely free from dust; 13.39 miles of macadam roads have been repaired, the greater portion of them have been resurfaced with 4 inches of broken stone; 4.3 miles of sidewalks have been cleaned of snow and ice after storms; 29,051 square feet of old flagging has been relaid; 2,813 square feet of new flagging has been laid; 38,641 linear feet of curb and gutter, and 18,421 square feet bridging have been reset and repaired. Several miles of asphalt streets have been sprinkled with sand when slippery and inconvenient for travel; 139 cesspools have been cleaned and kept in condition to dispose of storm water; 7 new cesspools have been built; 4,036 inspections have been made upon receipt of complaint. Between January 1 and June 1, 643 incumbrances were removed by this division of the Bureau. In doing the above work the following quantities of material have been used:

	QUANTITY.	COST.
Broken stone.	12,784 cubic yards	\$20,430 59
New curb	3,212 linear feet	1,825 00
New bridging. ....	.....	.....
New flagstones.	2,750 square feet	412 50
Sand	12,075 cubic yards	7,560 92
Granite blocks.	97.432	572 92
Cobblestones	9,543 cubic yards	.....
Cement.	95 barrels	205 00
Paving pitch.	110 "	311 15
Gravel ...	105 tons	292 85

	QUANTITY.	COST.
Paving brick.....	5,500	\$159 10
Earth filling.....	31,666 cubic yards }	Obtained without cost.
Lumber.....		360 10
Total.....		\$32,130 13

The wages of the men employed in doing the above work were as follows:

Connections gangs.....	\$50,046 28
Repair gangs.....	107,778 89
Suburban repair gangs.....	50,667 50
Men employed in yards and stables.....	9,796 37
Sprinkling wagons.....	7,767 50
Removing incumbrances.....	1,664 85
Total	\$235,949 39
Amount of pay-roll not properly chargeable to street repairs..	8,228 00
Total properly chargeable to street repairs.....	\$227,721 39
Paid from account "Labor, Maintenance and Supplies".....	\$201,474 76
Paid from account "Restoring and Repaving—Special Fund" ..	34,474 63
Account "Labor, Maintenance and Supplies" actually spent in wages	193,246 76
Total amount spent for repairs to stone pavements....	\$169,164 61

The force employed when recruited to its full strength consisted of about 480 men of all classes. These were apportioned as follows:

Foremen	23
Assistant foremen.....	8
Pavers	44
Rammersmen	22
Laborers	254
Inspectors	3
Flaggers	4
Trucks	14
Horses and carts.....	72

Horses and wagons.....	19
Sprinkling wagons.....	14
Steam rollers.....	4

Seventeen gangs of men were employed in making repairs to stone pavements in the built-up portion of the borough. Eight gangs of men were employed in making repairs to macadam and dirt roads in the suburban districts. One small gang of men was employed removing sand and dirt left on the pavement by the pavers.

This division of the Bureau is concerned with the repair and maintenance in good order of—

125.47	miles of granite pavement ;
193.85	“ cobblestone pavement ;
46.48	“ belgian “
86.34	“ macadam “
4.9	“ brick “
1.08	“ trap-block “
0.26	“ miscellaneous “
Total, 458.38	“ pavement.

This nearly equals the total mileage of paved streets in the boroughs of Manhattan and The Bronx. In addition to the above, several hundred miles of dirt roads and unpaved streets should be repaired and otherwise cared for. Forty-two bridges and viaducts not under the jurisdiction of the Department of Bridges are regularly inspected and kept in repair. One new bridge has been built this year. A multitude of small repairs of various kinds also falls to our lot. All of the above duties if performed properly and to the satisfaction of all concerned, I think you will agree, form no small task, and one which is worthy of and which requires the best energies and most earnest efforts of every man upon whom responsibility rests.

At the beginning of last season fully one-half of the cobblestone pavements required either to be entirely relaid or to be extensively repaired. Many miles of granite and Belgian block pavements were in desperate need of repairs. These repairs in

many cases could be made properly only by entirely relaying the pavement.

Repairs to dirt roads cannot be lasting without the use of material such as is not available, and without larger expense than is usually thought wise for us to incur. Many of these dirt roads traverse finely built up suburban districts, where the demand that they be kept in good repair is insistent. Many miles of them have never been given a shape that even faintly resembles a roadway. In consequence some repairs should be made to the majority of these roads each year, and many of them should be properly formed and graded so that they will be drained properly.

A large proportion of the macadam roads and streets in the suburbs have reached the point when they must be remacadamized or must cease to be maintained as such. They are the only passable highways between the suburban districts and the older portions of the borough. They are practically the only pavement to be found in the suburbs, and some years must elapse before a better class of pavement can be substituted for them. Nearly all of them were paid for by funds raised by the property-owners of the localities when they were laid. Inasmuch as the City is charged with the duty of maintaining them, would it not be unjust and unwise to permit them to continue their present rapid decline to a state of utter ruin in which many of them are already to be found?

From the above conditions to the point where we can say that all our pavements and roads are properly maintained and are in good repair is a far cry. Although it will not be possible to make all needed repairs for some years to come if the present rate of progress is maintained, I do not think it an extravagant statement to say that we shall be able to nearly complete the most urgent repairs this season. I believe that more repairs have been made during the last year than have ever been made before in one season, and that these repairs have been made at as small a cost per square yard and in as substantial manner as has ever been done before. The repairs made to our granite

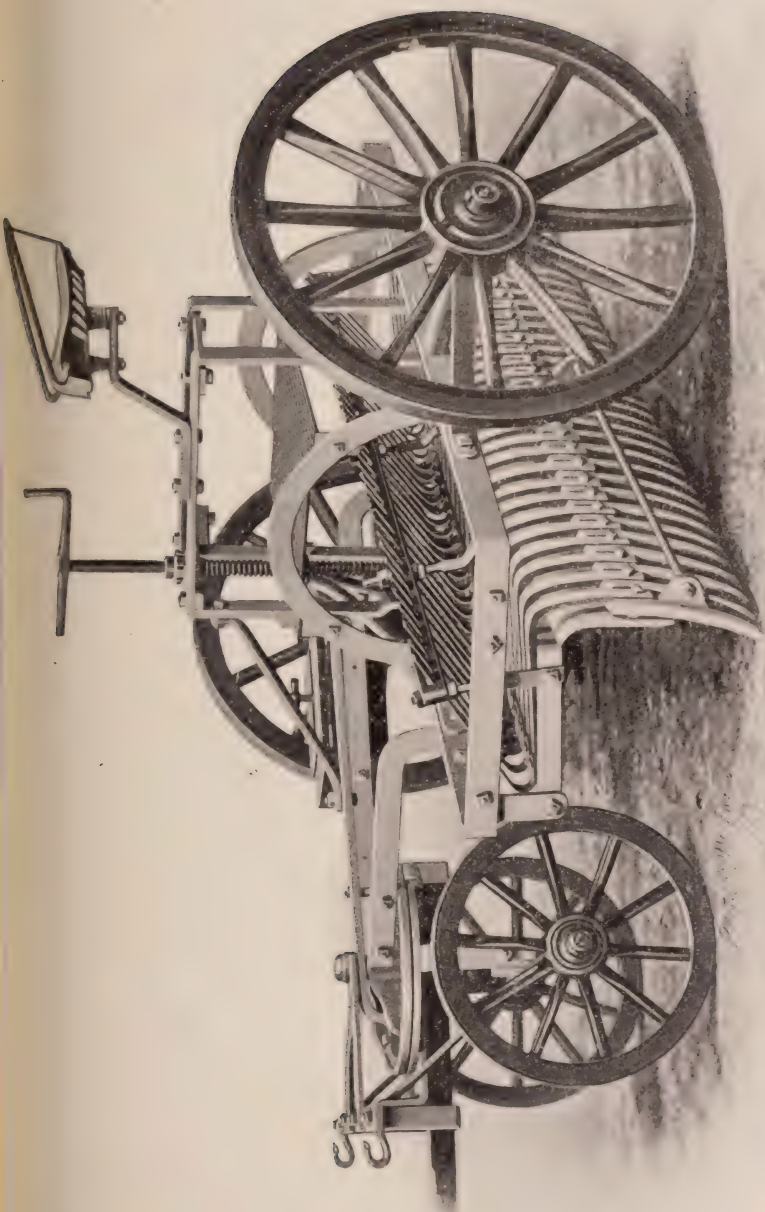
pavements have been inadequate for several years, and while the energies of the Bureau have been exhausted in a vain attempt to keep the cobblestone pavements in a passable condition, the granite pavements have steadily deteriorated. It is not a great or impossible task to keep these granite pavements in repair if they are given attention at the proper time, but if they are allowed to continue without needed repairs they will in a few years rival our cobblestones in unpopularity.

Few repairs comparatively have been made to the Belgian block pavements. They are quite generally in need of repairs, and many of them should be relaid. It would lessen the work of keeping all stone pavements except cobblestones in repair at least 50 per cent. if they were not constantly torn up for the purpose of installing and repairing water, sewer, gas and electric mains, conduits and connection pipes. In order to accommodate traffic the pavement over these trenches and openings is restored as soon as possible. Settlement continues for at least a year, so that the pavement should always be relaid the second time if it is to be left in as good condition as it was before it was disturbed. In view of this the prices charged to plumbers and others for opening the pavement are none too great. It has not been customary to systematically repave openings in pavements the second time, and, in consequence, after a few years of tearing up they become so rough that they should be entirely relaid. The recent decision requiring granite pavements over trenches to be restored on a concrete foundation will partially but not entirely remedy this evil.

If, as has been declared, it is impossible to keep our cobblestone pavements and dirt roads in perfect condition by any reasonable expenditure, and some part of our work must be left undone, would it not be wiser to make sure first that the better classes of pavement are well cared for and that the macadam pavements in the suburbs for which the people have paid are kept in repair, even though the unpaved streets, for the improvement of which nothing has been paid by the owners of adjacent property, are not kept in perfect condition?

In relaying or repairing stone pavements it is always necessary to dispose of a large quantity of old material that cannot be used. Thirty days after the repairs are made a quantity of sand and accumulated dirt must be removed and the pavement thoroughly cleaned. All of this material is now carted to some dumping place where the privilege of dumping is free. Year by year these places have been growing more scarce until now I believe there is not one place left in the built up portion of the borough where this material can be disposed of, and it must be hauled several miles to the suburbs—24,470 loads of this refuse material were hauled away this season. The disposition of this material will continue to be more and more expensive and will add an appreciable amount to the cost of repairing pavements. This increased cost amounted to several cents per square yard in our work this season, and together with the variable distance that material is hauled from the yards, accounts for the variation in prices shown in the attached tables. Great quantities of useless cobblestones accumulate in our yards, and the expense of disposing of them has heretofore been considerable. These stones, mixed with cobblestones that are fit to use again in making repairs are hauled there by contractors, and must all be hauled away again, a distance of several miles, after the good material is sorted out. It is now proposed to crush all of this stone and all of the useless material that accumulates in repairing stone pavements, and use it in concrete foundations of modern granite pavements. We will no doubt be able to deliver this broken stone on the street ready for use at a cost of not more than 75 cents per cubic yard. This will make it possible for us to lay granite block pavement on a concrete foundation at a very reasonable price, since many granite blocks are to be obtained from other streets and involve no expense except that of hauling them to the place where they are to be used.

With the exception of a few thousand of granite blocks that were purchased early in the spring, nothing has been spent for such material this season, a sufficient supply having been ob-



MACADAM SCRAPER.

tained from Fourth avenue, where the old granite pavement was removed. About 150,000 of these blocks are still unused. Nothing has been spent for cobblestones or Belgian blocks, a sufficient quantity having been received from streets where such material was removed.

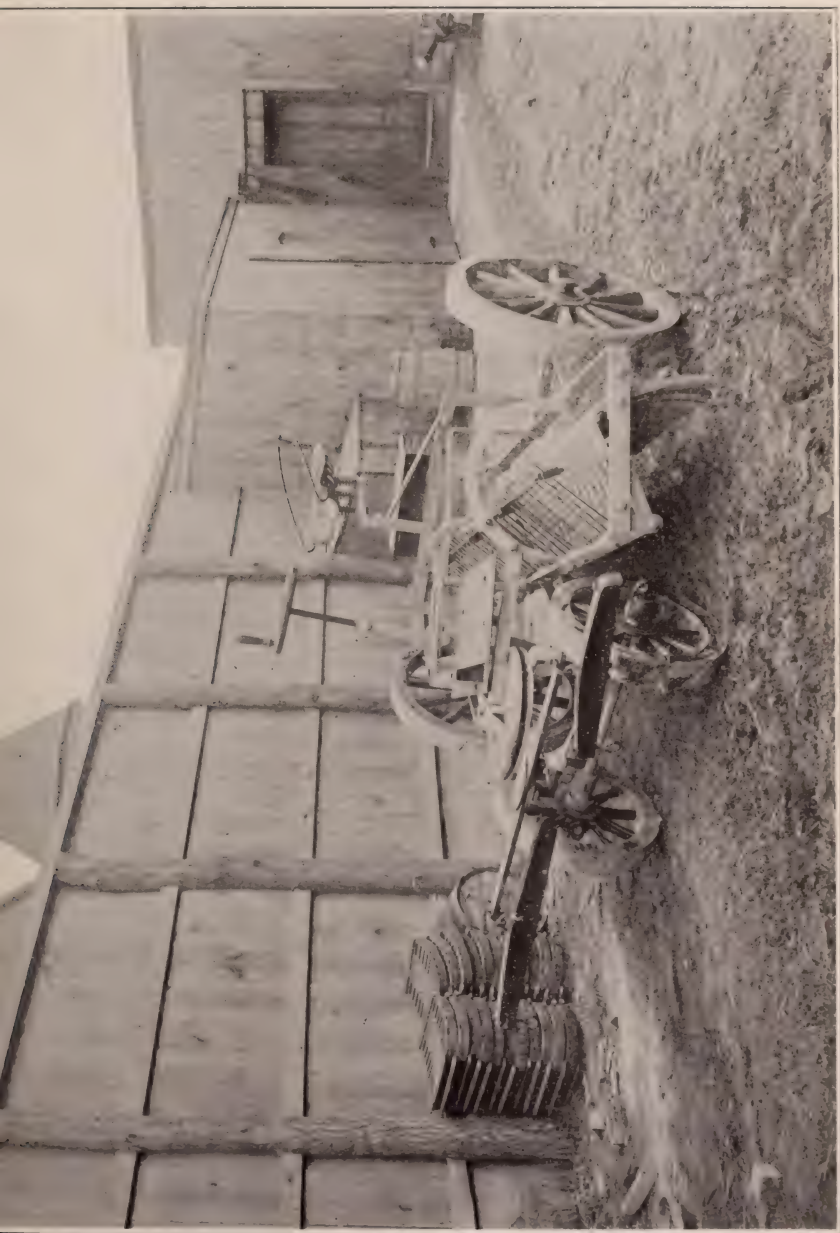
Our force of flaggers should be doubled this season. This would enable us to make thorough repairs to the curb wherever the pavement is repaired to remedy promptly all defects in curbstone and crosswalks that are complained of, and to repair bridge stones in many miles of granite pavements where they are now practically worn out.

Seven yards are now used by this Bureau for storing material. The yards are now well stocked with material and we are in readiness to begin work with our whole force in the spring as soon as the weather permits. Two new yards have been added for our use, and one of these is already open for use and is partially filled with material. We shall be able to use these yards to a very good advantage during the coming season; we are preparing to abandon one yard when the lease expires in May next.

At the beginning of this year the Bureau owned practically no machinery with which to do its work, and the supply of tools was inadequate for the increased force and amount of work proposed. It can hardly be said, I think, that the macadam pavement and the dirt roads have ever been kept in good condition. The most that has ever been attempted, apparently, has been to make small and temporary repairs that were requested by citizens where conditions were so bad that the locality was hardly fit for human habitation. Small holes and connection openings were generally repaired and the macadam and some dirt roads were cleaned of weeds and filth.

The population of the suburban wards, it is safe to say, is not less than 100,000, and is growing more rapidly than any other portion of the borough. Within the limits of this territory there are more miles of macadam streets and dirt roads than there are miles of macadam in the Borough of Manhattan, and

more miles of macadam than there are paved streets to be found in the ordinary American city of twice the population. Almost without exception a city of that size will be found to be equipped with a fairly complete outfit of road making machinery which is considered to be absolutely necessary for the care and repair of the pavements and roads. It is unnecessary to say to anyone familiar with this work that to attempt such a task with shovels and hoes only would be futile. Late in the season there was purchased for our use two steam rollers, two road machines with adjustable blades, two macadam scrapers, two machines for spreading sand on slippery pavements, two street sweeping machines, a portable stone crushing plant, a new tar pot and gravel heater, and an adequate supply of smaller tools, so that lack of machinery and tools cannot be offered as an excuse at the end of the coming season if satisfactory results have not been obtained in the repair and maintenance of our suburban streets and roads. It is your intention to increase the force of men working in the suburbs and change the organization so that the work will be more thoroughly systematized and better results obtained. Our new macadam scraping and sweeping machines work very satisfactorily and will make it possible for us to keep our 86 miles of macadam streets clean and in better condition than ever before. These machines can be used to good advantage also in cleaning stone pavements after the pavement has been relaid. A much larger sum than their cost has already been saved in this work, although the machines were only purchased a few weeks before work ceased for the season. A regular street cleaning force will be organized and employed at this work continuously. The machines for spreading sand on the asphalt pavements will enable us to sand several miles of asphalt more than we otherwise could, and will spread the sand so much more evenly than it can be done by hand that nearly 50 per cent. of it can be saved. If work can be commenced early in the spring and continued steadily throughout the season we should be able to accomplish more with two steam rollers than



THE MACADAM AND COBBLE SCRAPER.



NEW BRIDGE AT AVENUE U, OVER GARRETSON'S CREEK.

we have accomplished with four this season, working intermittently.

For purpose of surface drainage where there are now no sewers capable of receiving storm water, 139 cesspools have been built within the last few years. These cesspools are usually about 12 feet deep, 10 feet in diameter, and are provided with a park basin cover. They reach several feet into a bed of gravel, and surface water soaks away rapidly, so that after an ordinary storm the streets are relieved of ponds that would otherwise form. These basins soon fill with mud and débris and should be cleaned at least twice a year. Only five new cesspools have been built this year. It is to be hoped that the rapid progress now being made on the sewerage system for the outlying districts will soon make these cesspools unnecessary.

During the season six horses were purchased by the Bureau, and three were sold after having outlived their usefulness. Three more should be sold as soon as possible for the same reason. A small addition was made to our stable at Nevins and Douglass streets early in the season, and there is now room for nine horses at this stable. Four horses are boarded at conveniently located livery stables. The cost of keeping these horses, together with the cost of repairs to wagons, etc., is stated in the accompanying table.

The contract for building the Garrettson's Creek Bridge, at Avenue U, was let to Barth S. Cronin on August 23, 1902, and the bridge is now nearly completed. The contract price of this bridge was \$15,800. It is a timber trestle 756 feet long, with a roadway 24 feet wide and footwalks 6 feet wide. The piles and the timber in the floor under the roadway and the sheet piling were creosoted and the whole bridge is substantially built. I have seldom seen a more perfect lot of timber used in a structure of this kind than was used here, and there is no reason why it should not serve its purpose substantially without repairs for many years to come. This bridge will open a continuous highway near the shore front of the borough as far east as Bergen Beach. A list of bridges cared for by this

Bureau is herewith appended. Some small repairs have been made to these bridges this year, and all of them are in good condition with one exception: the bridge on Kingsland avenue, over a branch of Newtown creek, is in bad condition and should be filled in and removed as soon as possible. It is a timber trestle and has been severely damaged by fire.

Very few offenses have been committed and comparatively few men have been discharged. I am not aware that more than one complaint has been made in regard to the conduct of the men in the street, and when all the circumstances are considered, I think that one was not entirely justified.

The offering of prizes to the men for the most efficient work by the Commissioner of Public Works and the Borough President proved to be a healthful stimulant in almost all cases, and I think that the honor of having won a certificate of merit is appreciated by every man who received one.

It has been gratifying to find that as an inducement to do efficient work the majority of the employees of this division of the Bureau need only the assurance that such work is appreciated and will add to the esteem in which they are held by their superiors.

I wish particularly to commend Mr. Covert, the general foreman, clerks, the majority of the foremen and the assistants for conscientious work and efforts to make this year one to be remembered by the quantity of work done. The work of repairing streets is not one that easily kindles the imagination or arouses the enthusiasm. Dull detail and routine do not ordinarily call forth one's best efforts. It is all the more creditable, therefore, that their co-operation has been generous and enthusiastic. Without such a spirit on the part of those engaged in it the great work of making the site of what is soon to be the greatest city of the world a more suitable dwelling place for the coming millions, of which we are pleased to believe our work is an humble part, must fail of its high purpose. We look forward to the work of the coming season with the confident assurance that with better organization, better

equipment and a better knowledge of difficulties to be overcome, we will make the results of the past year's work seem small by comparison.

Very respectfully,

E. J. FORT,
Assistant Engineer.

LIST OF TABLES.

- Table No. 1.—Granite pavements relaid and repaired.
Table No. 2.—Belgian-block pavements relaid and repaired.
Table No. 3.—Cobblestone pavements relaid and repaired.
Table No. 4.—Macadam pavements relaid and repaired.
Table No. 5.—Material, tools, etc., purchased for the purpose of street repairs.
Table No. 6.—Bridges under the jurisdiction of the Bureau of Highways.

Granite Pavements Repaired and Relaid.

	LENGTH, FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Adams street, Myrtle avenue to Johnson street.....	360	673	\$0.77	Cobble-stones removed.
Berry street, Broadway to North Twelfth street.....	400	1,372	.57	Repaired.
Bushwick avenue, Greene avenue to Weirfield street.....	3,200	2,061	.50	"
Greenpoint avenue, Manhattan avenue to Franklin street.....	900	2,326	.48	"
Harrison street, Van Brunt street to East river	576	395	.66	"
Johnson street, Adams street to Pearl street.....	200	585	.55	Cobble-stones removed.
Kent avenue, Broadway to Taylor street.....	2,400	4,941	.46	Relaid.
Kingsland avenue, Meeker avenue to Maspeth avenue.....	2,330	1,363	.52	Repaired.
Madison street, Central avenue to Hamburg avenue.....	500	480	.68	"
Stuyvesant avenue, intersection of Greene avenue.....	34	225	.77	"
Surf avenue, West Eighth street to West Twentieth street.....	2,500	803	.54	"
Thirty-ninth street, Fourth avenue to Fifth avenue	700	748	.64	Cobble-stones replaced.
Throop avenue, Floyd street to Willoughby avenue.....	1,050	2,673	.50	Relaid.
Wallabout street, Classon avenue to Nostrand avenue.....	2,350	6,250	.39	"
Water street, Adams street to Washington street.....	231	586	.57	"
Total.....	17,731	25,481		

Average cost per square yard, 49 cents.

TABLE No. 2.
Belgian Block Pavements Repaired and Relaid.

	LENGTH, FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Arlington avenue, Hendrix street to Linwood street.....	2,000	2,848	\$0.50	Repaired.
Fifth avenue, Fortieth street to Fifty-ninth street.....	4,883	2,179	.58	"
Garfield place, Eighth avenue to Prospect Park, West.....	600	2,600	.50	Relaid.
Madison street, Evergreen avenue to Bushwick avenue.....	550	245	.63	Repaired.
New Jersey avenue, Jamaica avenue to Fulton street.....	400	125	.53	"
St. Nicholas avenue, Greene avenue to Stockholm street.....	1,006	195	.41	"
Tenth street, Second avenue to Third avenue.....	740	2,378	.47	Relaid.
Washington avenue, Taylor street to Clymer street.....	450	275	.55	Repaired.
Totals	10,629	10,905		

Average cost per square yard, 51 cents.

TABLE No. 3.
Cobblestone Pavements Repaired and Relaid.

STREET.	LENGTH FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Ainslie street, Bushwick avenue to Marcy avenue.....	3,593	1,776	\$0.46	Repaired.
Bush street, Dwight street to Hamilton avenue.....	2,812	2,997	.36	"
Bergen street, New York avenue to Brooklyn avenue.....	600	755	.38	"
Baltic street, Hicks street to Columbia street.....	441	751	.41	Relaid.
Baltic street, Clinton street to Court street.....	518	752	.41	Repaired.
Commerce street, Richard street to Van Brunt street.	523	1,863	.31	Relaid.
Cornelia street, Knickerbocker avenue to Bushwick avenue.....	2,650	5,284	.37	Repaired.
Cook street, Manhattan avenue to Morrell street.....	1,338	1,240	.43	"
Delevan street, Columbia street to Van Brunt street.....	1,083	3,644	.32	Relaid.
Dwight street, Columbia street to Verona street.....	461	737	.39	"
Duffield street, Fulton street to Nassau street.....	2,585	1,976	.34	Repaired.
Driggs avenue, South Third street to South Fourth street.....	236	540	.55	Relaid.
Emerson place, Lafayette avenue to Flushing avenue.....	3,333	8,527	.37	Repaired.
Evergreen avenue, Gates avenue to Putnam avenue.....	990	1,425	.32	"
Engert avenue, Russell street to Humboldt street.....	200	665	.34	"

TABLE NO. 3—(Continued).

STREET.	LENGTH FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Eighteenth street, Eighth avenue.....	700	2,432	0\$.36	Relaid.
Fifth street, Seventh avenue.....	696	385	.48	Repaired.
First street, Bond street to Gowanus Canal.....	470	1,477	.29	Relaid.
Forty-eighth street, Fifth avenue to Sixth avenue.....	736	640	.41	Repaired.
Frost street, Manhattan avenue to Lorimer street.....	865	300	.44	"
Gates avenue, Myrtle avenue to Wyckoff avenue.....	200	319	.40	"
Gerry street, Flushing avenue to Throop avenue.....	1,335	5,026	.33	Relaid.
Graham street, Flushing avenue to De Kalb avenue.....	3,518	1,932	.37	"
Greene avenue, Bushwick avenue to Wyckoff avenue.....	3,995	1,780	.40	Repaired.
Grove street, Bushwick avenue to St. Nicholas avenue.....	4,585	3,123	.32	"
Gwinnett street, Harrison avenue to Throop avenue.....	636	1,505	.33	Relaid.
Halsey street, Stuyvesant avenue to Reid avenue.....	786	1,456	.34	"
Harrison avenue, Walton street to Gwinnett street.....	236	230	.39	"
Hanover place, Fulton street to Livingston street.....	300	589	.38	"
Hart street, Throop avenue to Marcy avenue.....	1,600	5,608	.37	"
Howard avenue, Madison street to Fulton street.....	3,380	2,763	.37	Repaired.
Hewes street, South Third street to Union avenue.....	250	1,102	.34	Relaid.

High street, Bridge street to Navy street.....	1,727	2,877	.39	"
Hope street, Rodney street to Union avenue.....	860	395	.44	Repaired.
Havemeyer street, Division avenue to North Ninth street.....	3,500	700	.40	"
Humboldt street, Grand street to Norman avenue.....	3,430	9,791	.37	"
Imlay street, Hamilton avenue to Williams street.....	2,070	1,706	.30	Relaid.
Irving street, Columbia street to Van Brunt street.....	500	2,086	.34	"
John street, Gold street to Hudson avenue.....	374	853	.36	"
Johnson street, Pearl street to Jay street.....	206	802	.39	"
Kent avenue, Flushing avenue to Willoughby avenue.....	1,920	2,433	.34	"
Kingsland avenue, Meeker avenue to Greenpoint avenue.....	3,500	7,492	.32	Repaired.
Keap street, South Second street to South Third street.....	270	140	.42	"
Kosciusko street, Lewis avenue to Broadway.....	2,170	8,542	.42	Relaid.
Lee avenue, Lynch street to Heyward street.....	236	430	.50	"
Lexington avenue, Classon avenue to Ralph avenue.....	9,742	4,179	.38	Repaired.
Lawrence street, Tillary street to Johnson street.....	325	800	.30	"
Linden street, Broadway to Central avenue.....	1,908	3,434	.37	"
Linden street, Myrtle avenue to St. Nicholas avenue.....	980	478	.38	"
Little Nassau street, Graham street to Kent avenue.....	447	863	.34	Relaid.
Livingston street, Boerum place to Nevins street.....	2,320	1,719	.41	Repaired.
Lorraine street, Hamilton avenue to Columbia street.....	2,550	2,208	.38	"
Lynch street, Bedford avenue to Harrison avenue.....	2,000	8,425	.37	Relaid.

TABLE NO. 3—(Continued).

STREET.	LENGTH FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Macon street, Howard avenue to Saratoga avenue.....	736	360	\$0.39	Repaired.
Marcy avenue, Quincy street to Greene avenue.....	510	563	.34	"
Madison street, Broadway to Knickerbocker avenue.....	3,300	3,545	.33	"
McDonough street, Howard avenue to Saratoga avenue.....	736	1,027	.38	"
Moffatt street, Broadway to Evergreen avenue.....	1,280	243	.36	"
Milton street, Franklin street to West street.....	350	1,508	.36	Relaid.
Monitor street, Engert avenue to Richardson street.....	1,015	434	.34	Repaired.
Moore street, Bushwick avenue to White street.....	965	850	.46	"
John street, Gold street to Hudson avenue.....	374	853	.36	Relaid.
Johnson street, Pearl street to Jay street.....	206	802	.39	"
Kent avenue, Flushing avenue to Willoughby avenue.....	1,920	2,433	.34	"
Kingsland avenue, Meeker avenue to Greenpoint avenue.....	3,500	7,492	.32	Repaired.
Patchen avenue, Madison street to Putnam avenue.....	236	675	.44	"
Prospect street, Jay street to Navy street.....	1,082	684	.35	"
Pulaski street, Throop avenue to Sumner avenue.....	761	1,355	.34	Relaid.
Ralph street, Bushwick avenue to St. Nicholas avenue.....	4,565	863	.42	Repaired.
Rapelyca street, Richard street to Van Brunt street.....	490	1,826	.35	Relaid.

Rodney street, Metropolitan avenue to Broadway.....	2,278	2,085	.41	Repaired.
Roebing street, Broadway to North Tenth street.....	3,640	3,791	.36	"
Sixth street, Second avenue to Gowanus Canal.....	298	540	.61	Graded and paved.
Second avenue, Sixth street to Ninth street.....	720	1,400	.29	Relaid.
Sandford street, Park avenue to Flushing avenue.....	746	2,295	.33	"
Second avenue, Ninth street to Tenth street.....	300	720	.32	"
Steuben street, Flushing avenue to Lafayette avenue.....	3,335	5,849	.37	"
South Fourth street, Kent avenue to Bedford avenue.....	887	1,557	.34	"
South First street, Kent avenue to Union avenue.....	4,540	296	.47	Repaired.
South Second street, Kent avenue to Union avenue.....	4,674	740	.42	"
Sumner avenue, Hancock street to Jefferson avenue.....	236	230	.55	Relaid.
Skillman street, Flushing avenue to Willoughby avenue.....	1,920	906	.37	Repaired.
Stockholm street, Central avenue to Myrtle avenue.....	200	286	.43	Relaid.
Sandford street, De Kalb avenue to Myrtle avenue.....	1,317	1,786	.33	"
Sumpter street, Fulton street to Ralph avenue.....	1,420	2,402	.37	"
Summitt street, Conover street to Van Brunt street.....	400	1,426	.41	"
Thirty-seventh street, Third avenue to Fifth avenue.....	1,460	565	.48	Repaired.
Ten Eyck street, Union avenue to Waterbury street.....	3,690	1,284	.44	"
Troutman street, Irving avenue to Hamburg avenue.....	1,323	1,860	.34	Relaid.
Van Dyke street, Ferris street to Conover street.....	500	1,706	.30	"
Verona street, Van Brunt street to New York Bay.....	400	928	.32	"

TABLE NO. 3—(Continued).

STREET.	LENGTH FEET.	SQUARE YARDS.	COST PER SQUARE YARD.	REMARKS.
Wolcott street, Ferris street to Conover street.....	500	1,880	\$0.40	Relaid.
Willoughby avenue, Central avenue to Myrtle avenue.....	1,200	267	.31	Repaired.
Wyckoff avenue, Gates avenue to Bleecker street.....	1,010	1,291	.29	Relaid.
Waverly avenue, Atlantic avenue to Fulton street.....	665	1,960	.38	"
Woodbine street, Broadway to Knickerbocker avenue.....	3,258	4,245	.33	Repaired.
Walton street, Wallabout street to Broadway.....	1,868	1,937	.33	"
Total.....	149,413	191,506		

TABLE NO. 4.
Macadam Pavements Repaired and Relaid.

STREET.	LENGTH, FEET.	SQUARE YARDS.	STONE AND SCREENINGS.	COST, PER SQUARE YARD.	REMARKS.
Beverly road, Flatbush avenue to Ocean Parkway.....	4,508	18,700	360	\$0.13	Repaired.
Avenue C, Flatbush avenue to Coney Island avenue....	3,432	14,188	90	.02	Repairs incomplete.
Clarkson street, Flatbush avenue to New York avenue..	3,433	10,835	1,140	.35	Remacadamized.

Eighty-third street, Twelfth avenue to Fifteenth avenue	2,300	4,600	110	.30	"
Fourth avenue, Sixtieth street to Sixty-second street.....	510	3,060	90	.08	Repaired.
Lincoln road, Flatbush avenue to Rogers avenue.....	1,889	6,297	1,030	.56	Macadamized.
Nineteenth avenue, Cropsey avenue to Eighty-sixth street	2,266	6,042	760	.50	Remacadamized.
Ocean avenue, Prospect Park to Avenue G.....	7,750	40,599	600	.05	Repaired.
Sheepshead Bay road, West Eighth street to Ocean Parkway.....	2,220	5,920	308	.21	"
Seventy-ninth street, Seventh avenue to Eighteenth avenue.....	7,010	18,693	200	.16	"
Seventy-ninth street, Fourth avenue to Shore road.....	3,520	9,387	1,200	.26	Remacadamized—incomplete.
Sixty-fifth street, Fifth avenue to Fourteenth avenue....	6,810	18,160	330	.06	Repaired.
Sixtieth street, Fourth avenue to Fifteenth avenue.....	8,360	20,725	687	.12	"
Sixty-seventh street, Eighteenth avenue to New Utrecht avenue.....	2,339	2,078	123	.32	Remacadamized.
Seventh avenue, Seventy-ninth street to United States Reservation.....	5,268	10,536	2,080	.56	Repaired.
Voorhees avenue, Ocean avenue to East Twenty-eighth street.....	1,975	6,583	450	.22	Small repairs.
Winthrop avenue, Flatbush avenue to Rogers avenue....	1,889	6,279	50	.02	"
West Twelfth street, Neptune avenue to Surf avenue....	1,292	3,733	503	.37	Repaired—incomplete.
West Fifteenth street, Surf avenue to Canal avenue.....	1,933	5,584	730	.42	Remacadamized.
West Twenty-first street, Surf avenue to Neptune avenue	2,020	6,058	930	.44	"
Total.....	70,724	227,057			

Average cost of maintenance on above streets, per square yard, 18 cents.

TABLE No. 6.
Bridges Under Jurisdiction of the Bureau of Highways.

CHARACTER.	LOCATION.	OVER WHAT.	LENGTH OR SPAN.	CONDITION.	WHEN BUILT.	WHEN LAST REPAIRED.
Foot bridge, pile bents.....	Barren Island, over Tidewater creek.....	Tidal creek.....	Feet. 875	Fair	1898	Floor, 1902.
Highway bridge, pile bents....	Barren Island.....	"	875	"	1901	
"	Betts creek, foot Logan avenue.....	"	65	" .....	....	Rebuilt 1899.
"	Coney Island avenue, at Coney Island creek.....	"	85	Poor ....	....	1902.
Highway bridge, plate girder and steel beams....	Crooks avenue, between St. Paul's place and Ocean avenue.....	Railroad cut.....	27	Fair ....	....	
Highway bridge, plate girder and steel beams....	Caton avenue, between St. Paul's place and Ocean avenue.....	"	27	" .....	....	
Highway bridge, plate girder and steel beams....	Church avenue, between East Seventeenth street and East Eighteenth street.....	"	27	" .....	....	
Highway bridge, steel beams	Douglass street, between Clason and Franklin avenues....	"	26	Good ....	....	
Railroad bridge, plate girder	East Eighteenth street, at Ave- nue U.....	Highway	42	"	1901	
Highway and railroad bridge, pile bents.....	Emmons avenue, at Coney Island creek.....	Tidal creek.....	125	Fair	1897	
Highway bridge, plate girder, steel beams.....	Flatbush avenue, between Ocean and Washington avenues....	Railroad cut.....	27	" .....	....	
Highway bridge, plate girder.	Fort Hamilton avenue, between Woodruff and Ocean avenues....	" .....		" .....	....	
	Fort Hamilton avenue, between St. Paul's place and Flatbush avenue	"	27	" .....	....	

TABLE NO. 6—(Continued).

CHARACTER.	LOCATION.	OVER WHAT.	LENGTH OR SPAN.	CONDITION.	WHEN BUILT.	WHEN LAST REPAIRED.
Highway bridge, pile bents...	Gravesend Beach lane, Town creek.	Tidal creek.....	Feet. 35	Fair ....	....	{ Rebuilt above pile heads 1900. Floor, 1900.
“ “ }	Hog Point creek and Emmons avenue	“	25	Good ....	....	
Highway bridge, wood trestle..	Kouwenhoven lane, Bedford creek..	Brook	20	“ .....	....	
Highway bridge, wooden trestle	Kingsland avenue, Newtown creek (branch).....	Tidal creek.....	75	Very poor	....	
Highway bridge, iron draw...	Kent avenue, Bushwick creek.....	“	106	Fair ....	....	New floor, 1901.
Highway bridge, plate girder }	Lincoln road, between Ocean and Flatbush avenues.....	Railroad cut.....	58	Good	1902	Now building.
Highway bridge, steel beams }	Montgomery street, between Wash- ington and Franklin avenues..	“	27	Fair ....	....	
Highway bridge, plate girder }	Malbone street, between Flatbush and Washington avenues.....	“	27	“ .....	....	
Foot bridge, pile bents.....	Ocean avenue, at Sheephead bay..	Tidal creek.....	2,318	Good	1894	1902
Highway bridge, steel beams }	Sterling place, between Classon and Franklin avenues.....	Railroad cut.....	26	“ .....	....	
Highway bridge, plate girder }	St. Paul's place, between Caton and Church avenues.....	“	26	“ .....	....	
Highway bridge, pile bents. }	Shell road, over Coney Island creek	Tidal creek.....	165	Fair.....	....	{ New rails and planks, 1898.
“ “ }	Avenue U, at Gerretson's mill pond ...	“	756	Good	1902	
Foot bridge, pile bents.....	Voorhies avenue foot bridge.....	Meadow and creek	675	“	1900	
Highway bridge, plate girder }	Washington avenue, between Mont- gomery and Malbone streets...	Railroad cut.....	73	Fair ....	....	

Highway bridge, brick arch	Second avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
Highway bridge, plate girder, steel beam	Second avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
Highway bridge, brick arch.	Third avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
Highway bridge, steel beam.	Third avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
Highway bridge, brick arch	Fourth avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
"	Fourth avenue, between Sixty-fifth and Sixty-sixth streets	"	.....	25	"	....	....
Highway bridge, steel beam.	Fourth avenue, between Thirty-eighth and Thirty-ninth streets	"	.....	26	"	....	....
Highway bridge, brick arch.	Fifth avenue, between Thirty-eighth and Thirty-ninth streets	"	... ..	25' 6"	Feet.	....	....
"	Fifth avenue, between Thirty-fourth and Thirty-fifth streets	"	.....	25	"	....	....
Highway bridge, steel beam.	Fifth avenue, between Sixty-fourth and Sixty-fifth streets	"	.....	27	"	....	....
"	Fifth avenue, between Sixty-fourth and Sixty-fifth streets	"	.....	27	"	....	....
Highway bridge.	Seventh avenue, between Sixty-fourth and Sixty-fifth streets	"	.....	27	"	....	....
Highway bridge, wooden beam	Eighth avenue, between Thirty-eighth and Thirty-ninth streets	"	.....	30	"	....	....
Highway bridge, wooden truss	Ninth avenue, between Thirty-eighth and Thirty-ninth streets	"	.....	27	"	....	....

OFFICE OF THE PRESIDENT OF THE BOROUGH OF BROOKLYN, }
 TOPOGRAPHICAL BUREAU, }
 OFFICE OF THE ASSISTANT ENGINEER IN CHARGE, }
 December 31, 1902. }

Mr. GEO. W. TILLSON,
Chief Engineer:

DEAR SIR—I have the honor to transmit herewith the annual report of the Topographical Bureau for the twelve (12) months ending December 31, 1902.

Throughout the year a constant effort was made to deliver work. This report shows a large increase over the preceding year for the work thus accomplished.

Before January 1, 1902, this Bureau was a branch of the Topographical Bureau of the Board of Public Improvements. Part of the topographical work was done here and the remainder in other divisions of the central office. All this work has devolved on this office, and thus the scope of the office and field of the work have been materially enlarged.

On January 1 the office, owing to transfers and resignations, was numerically in a very depleted condition; this made it very difficult to properly organize the work in its new and larger field.

Additional men obtained in January and February were relatively inexperienced; for the office work they had to be especially trained by us. An effort was made, however, to secure the best progress. In the course of the year a number of men left us; to fill their places new men were obtained only with difficulty and at a cost of great interruption to the work. The addition of a large number of new men, subsequent changes,

and an insufficiently large force have all contributed to hinder the work.

It is exceedingly desirable that the salary paid in every instance be made the same as in other bureaus; otherwise competent and experienced men cannot be obtained for the work.

An addition to the office rooms obtained in August has proved a great help. This office now occupies rooms on three (3) floors of the building; there are no vault accommodations to protect our valuable maps and records in case of fire.

To satisfy the urgent demands for street openings, the maps, surveys and searches connected therewith have received almost the whole attention of the office. Much of the other necessary work has received but little attention. To retain, determine and fix the existing lines of the city streets in a proper manner, much more time is needed than has been given in the course of the year. The same is true of all changes affecting the lines or grades of the established street system; when new lines of streets are adopted, steps should be taken at once to properly fix them by monumenting stones placed in the ground. The systematic searches, collection of maps and records, and the filing in the office of all the information thus obtained—all this takes time; yet this work is undoubtedly a good business investment. In former years it has been done in a measure; the work should now be taken up again and vigorously prosecuted at once in order that the best results be obtained.

The work of the Topographical Bureau includes the following general divisions:

I.—To retain, determine and fix on the ground the lines of the existing street system, and to fix the new street lines as they are adopted.

This work consists in properly preserving or replacing all monument stones, and in placing them in position wherever they are needed. It necessitates the surveying and computation of traverse lines for the determination of block distances and angles, the determination of standards of measurement, and the compilation and care of monument records and maps.

The work has comprised the following :

A—Field work—

Accurate traverses have been carefully run as follows :

a—For the Determination of Street Lines.

1. Parkville—Franklin avenue, Coney Island avenue, Foster avenue, Bergen lane.
2. Seventh avenue—Seventy-first street, Stewart avenue, Bay Ridge avenue.
3. Second avenue—Bay Ridge avenue, Fourth avenue, Fifth avenue, Ninety-ninth street, Marine avenue.
4. Shell road—Neptune avenue, Stillwell avenue, Avenue X.
5. Surf avenue—West Thirty-seventh street, Mermaid avenue, Stillwell avenue.
6. Eighty-sixth street—Avenue X, Stillwell avenue.

b—For the Determination of Street Lines and Property Lines.

1. Ocean Parkway—Fort Hamilton avenue, Coney Island avenue, Church lane.
2. Adamsville—Liberty avenue, Railroad avenue, Atlantic avenue, Grant avenue.
3. Fourth avenue—Ninety-second street, Fort Hamilton avenue, Ninety-ninth street.
4. Fort Hamilton Village—Easterly of Fifth avenue, southerly of Eighty-sixth street, westerly of Eleventh avenue.
5. Neptune avenue—West First street, Sheepshead Bay road, West Sixth street.
6. Bedford avenue—In Flatbush.

Precise survey lines have been run for the determination of the following streets :

1. Third avenue, from Sixty-eighth street to Marine avenue.
2. Seventy-fifth, Eightieth and Eighty-sixth streets, westerly of Fourth avenue.
3. Fourteenth avenue, from Thirty-seventh street to Bath avenue.
4. Eighty-sixth street, from Fourth avenue to Gravesend avenue.
5. Seventy-fifth street, from Fourth avenue to Twenty-second avenue.
6. Seventh avenue, from Seventy-fifth street to Eighty-sixth street.

This field work was done as precisely as possible. Long lines were run, and special attention was given to the alignment and measurement of distances and angles.

These records were kept as far as possible.

A systematic effort is being made to find out which of the monument stones shown on the city map are now to be found in the ground.

B—Office work—

The work was used as far as needed for street openings. Very little time was found to devote to the more general work.

As the city map is defective in many places in block distances and monument stones, much will be gained by devoting more time to this branch of the work.

II.—Maps affecting changes in the established street system of the city.

This includes all work affecting changes in lines of existing streets, parks, closing and laying out streets, and changes in the established elevations of streets. It consists in the preparation of maps for adoption and filing, and includes field and office work.

A—Field work—

This comprises the following:

a—Surveys for Changes in Lines of Streets.

1. Cottage place, from Surf avenue to the Atlantic Ocean.
2. Jerome avenue, from Manhattan Beach Railroad to Avenue Y.
3. Bedford avenue, from Foster avenue to Flatbush avenue.
4. Widening Malbone street, easterly of New York avenue.

b—Surveys for Changes in Elevations of Streets.

1. Cross section of district bounded by Seventy-fourth street, Second avenue, Seventy-eighth street and Narrows avenue.
2. Cross section of Eighty-fifth street, from Third avenue to First avenue.
3. Profile of First avenue, from Seventy-second street to Eightieth street.
4. Profile of Albemarle road, from Flatbush avenue to Brooklyn and Brighton Beach Railroad.
5. Profile of Ovington avenue, from Third avenue to Seventh avenue.

B—Office work—

This includes the completion of the following maps:

I.—MAPS FORWARDED FOR ADOPTION.

a—*Maps Affecting Changes in Lines of Streets, Closing and Laying Out Streets and Public Parks.*

1. Shell road, from Avenue X to West Sixth street and extension of West Sixth street to Sheepshead Bay road.
2. Addition to Prospect Park—Willink entrance.
3. Church avenue, from Brooklyn avenue to East Fifty-seventh street.
4. Evergreen place, from its present terminus to Pellington place.
5. Lott's lane (Little lane), from East Second street to Ocean Parkway.
6. Forest place, from Fourth avenue to Eighty-eighth street.
7. Bedford avenue.
8. Fulton place, between Fulton and Livingston streets.
9. Twelfth avenue, from Forty-ninth street to Fiftieth street.
10. Addition to Sunset Park.
11. Malbone street, from former City line of Brooklyn at New York avenue to the former City line of Brooklyn easterly of Albany avenue, etc.
12. Forty-seventh street, from West street to Foster avenue.
13. Elbert's lane, lying between the centre lines of blocks bounded by the southerly side of Glenmore avenue and the northerly side of Pitkin avenue, and the easterly side of Enfield street and the westerly side of Sheridan avenue.
14. Silliman place and Ovington avenue, from Second avenue to Third avenue.
15. Kowenhoven lane, between New Utrecht avenue and Fifty-fifth street.
16. Public park, bounded by Seventh avenue, Fort Hamilton avenue and Seventy-third street.
17. Avenue C, from Ralph avenue to Remsen avenue.
18. Van Brunt's or Bennett's lane, from Third avenue to the Shore road.
19. Eighty-seventh street, from Narrows avenue to the Shore road.
20. East Seventh street, from Caton place to Ocean parkway.
21. Cottage place, from Surf avenue to the Atlantic Ocean.
22. Public park, bounded by Thatford street, Spoffard avenue, Chester street, Vienna avenue and Mill road within this area.
23. Lott place, between East Thirty-eighth street and Flatbush avenue, except the crossing of the King's highway.
24. Malbone street, from the line dividing the Twenty-fourth and Twenty-ninth Wards easterly of Brooklyn avenue, etc.
25. East Twenty-fifth street (Bedford avenue), from Foster avenue to Flatbush avenue.
26. Jerome avenue (Voorhies lane), from the land of the Manhattan Beach Railroad to Avenue Y.

27. Forty-seventh street, from West street to Gravesend avenue.
28. Public places at the junction of Highland boulevard and Bushwick avenue.
29. Public parks at Atlantic and Conduit avenues and Liberty and Fountain avenues.
30. King's highway, from Twelfth avenue to Fourteenth avenue.
31. King's highway, from Seventh avenue to Eleventh avenue.

b—Maps Affecting Changes of the Established Elevations of Streets.

1. Eighty-sixth street, from Fifth avenue to Fifteenth avenue.
2. Twentieth street, from Vanderbilt street to Tenth avenue.
3. Brooklyn terminal of the New East River Bridge (Williamsburg Bridge), included in the area bounded by South Fourth street, Havermeyer street, Broadway, South Sixth street and Berry street.
4. Territory bounded by Avenue H, East Fifteenth street, Avenue J, and Coney Island avenue.
5. East Fourteenth street, from Caton avenue to Church avenue.
6. Albemarle road, from Ocean avenue to the Brooklyn and Brighton Beach Railroad.
7. Nostrand avenue, from Malbone street to Hawthorne street.
8. Nostrand avenue, from Ditmas avenue to Flatbush avenue.
9. Rogers avenue, from Beverley road to Avenue F.
10. Rogers avenue, from Maple street to Hawthorne street.
11. Rutland road, from Bedford avenue to New York avenue.
12. Shepherd avenue, from Blake avenue to Belmont avenue.
13. Ovington avenue, from Third avenue to Fifth avenue.
14. Irving avenue, from Linden street to Palmetto street.
15. Flatbush avenue, from East Twenty-sixth street to Nostrand avenue.
16. Third avenue, from Senator street to Sixtieth street.
17. Sixth avenue, from Seventy-second street to Bay Ridge avenue; Seventy-first street, from Sixth avenue to Seventh avenue, and Ovington avenue, from Fifth avenue to Seventh avenue.
18. Ovington avenue, from Third avenue to Fifth avenue.
19. First avenue, from Seventy-third street to Seventy-ninth street; Seventy-fourth, Seventy-fifth, Seventy-sixth, Seventy-seventh and Seventy-eighth street, from Second avenue to Narrows avenue.
20. Eighty-fifth street, from Second avenue to Third avenue.
21. Territory bounded by Fulton avenue, Euclid avenue, Liberty avenue, Atkin avenue and Dresden street.
22. Sixth avenue, from Seventy-second street to Bay Ridge avenue; Seventy-first street, from Sixth avenue to Seventh avenue, and Ovington avenue, from Fifth avenue to Seventh avenue.
23. Territory bounded by Avenue C, Brooklyn avenue, Ditmas avenue, East Thirty-first street, Avenue G, Flatbush avenue and East Twenty-third street.

24. East Fourteenth street, from Caton avenue to Church avenue.
25. East Eighteenth street, from Avenue C to Avenue G.
26. Bedford avenue, from (Avenue B) Beverly road to Avenue D.
27. Eagle street, at Oakland street, in the Seventeenth Ward.

II.—MAPS FORWARDED FOR FILING.

a—*Maps Affecting Changes in Lines of Streets, Closing and Laying Out Streets.*

1. Public park bounded by Bridge street, Tillary street, Jay street and the northerly line of street, etc., and a street between Bridge street and Jay street, Fourth Ward.
2. Forty-fourth, Forty-seventh, Forty-eighth, Forty-ninth and Fiftieth streets, from First avenue to high-water line, New York Bay, Eighth Ward.
3. Addition to Prospect Park, bounded by east side lands, Washington avenue, Malbone street and Flatbush avenue, and the closing and discontinuing of Washington place, and a street north of Washington place.
4. Public park in the territory bounded by Fulton street, Chauncey street, Lewis avenue and Stuyvesant avenue.

b—*Maps Affecting Changes of the Established Elevations of Streets.*

1. Brooklyn terminal of Williamsburg Bridge, Thirteenth Ward.
2. Territory bounded by Foster avenue, Ocean avenue, Avenue G, East Seventeenth street, Avenue H and Coney Island avenue.
3. Territory bounded by Stewart avenue, Johnson avenue, the canal and Metropolitan avenue.

III.—MISCELLANEOUS MAPS.

1. Map showing property of State of New York along Clarkson street.
2. Banker street, from Franklin street to Union avenue.
3. Eleventh avenue, from Fifteenth street to Terrace place (blue print showing buildings).
4. Shell road southerly of Avenue X.
5. Sixth avenue, from Sixtieth street to Fort Hamilton avenue (black print showing buildings).
6. Portion of Coney Island, easterly of Coney Island avenue.
7. Seventy-fifth street, from Third avenue to Shore road.
8. Land of Kingston Avenue Hospital, in the Twenty-ninth Ward.

A number of copies had to be made of these maps. The maps thus affecting the established street system comprise 73 items and a total of 157 maps.

III.—To make surveys, searches, technical descriptions and maps for the Commissioners in the matter of acquiring title to streets.

A—Field work—

The want of sufficient determination of street lines has often served to retard this work. Besides the surveys required for the draft damage maps noted below as completed during the year, the following additional surveys have been made :

1. Locations at Church avenue and Prospect avenue.
2. Sterling place, from Schenectady avenue to Utica avenue.
3. Sixty-eighth street, from Fort Hamilton avenue to Shore road.
4. East Nineteenth street, from Voorhies lane to Emmons avenue.
5. Avenue L, from East Twenty-first street to East Twenty-fifth street.
6. Flatlands avenue, additional locations.
7. Avenue M, from Ocean avenue to Flatlands avenue.
8. Eighty-fifth street, between Narrows avenue and Sixteenth avenue, etc.
9. Eighty-fourth street, between First avenue and Eighteenth avenue.
10. Grant avenue, from Liberty avenue to Conduit avenue.
11. Williams avenue, from Sutter avenue to Livonia avenue.
12. Alabama avenue, from Pitkin avenue to Livonia avenue.
13. Sutter avenue, from Rockaway avenue to Barrett street.
14. East Twenty-first street, from Emmons avenue to Voorhies lane.

In many cases considerable work was needed to determine street lines before surveys for the opening maps could be made.

B—Office work—

This comprises :

a. Rule maps in triplicate and technical descriptions of land to be taken in street opening proceedings.

b. Draft damage maps, which give dimensions of every plot of land to be taken, encroachments on the streets, property owners, and any information of service to the commissioners.

c. Draft benefit maps, showing every lot included within the limits of the assessments for the opening and giving dimensions, and block and lot numbers.

d. Final damage maps in duplicate, and final benefit maps in triplicate.

e. Rule maps and technical descriptions for closing avenues and streets.

a—Rule maps.

These maps are made in triplicate and have technical descriptions showing the land taken in street opening proceedings. They are used by the Corporation Counsel in his application to the Supreme Court for the appointment of commissioners for estimate and assessment in the matter of acquiring title to streets.

	Feet.
1. East Nineteenth street, from Voorhies lane (Jerome avenue) to Emmons avenue.....	1,479
2. Grant avenue, from Liberty avenue to Conduit avenue.....	704
3. Avenue G, from Foster avenue to Ralph avenue.....	12,852
4. East Forty-fifth street, from the lands of the Holy Cross Cemetery to Flatbush avenue.....	9,872
5. Homecrest avenue, from Avenue T to Gravesend Neck road.	2,467
6. Malta street, from New Lots road to Vandalia avenue.....	4,460
7. East Thirteenth street, from Avenue T to Gravesend Neck road	2,430
8. Knickerbocker avenue, from Putnam avenue to Moffat street	2,920
9. East Twelfth street, from Avenue T to Sheepshead Bay road.	2,358
10. Bay Eighth street, from Benson avenue to Cropsey avenue..	1,544
11. Brooklyn avenue, from Avenue G to Flatbush avenue.....	2,746
12. East Eighth street, from Avenue T to Gravesend Neck road.	2,325
13. Flatlands avenue, from Flatbush avenue to Paerdegat basin..	6,120
14. East Nineteenth street, from Avenue M to Foster avenue....	6,387
15. Rutland road, from Canarsie avenue, or road, to Remsen avenue	5,249
16. Alabama avenue, from Pitkin avenue to Livonia avenue....	2,590
17. Williams avenue, from Sutter avenue to Livonia avenue.....	1,710
18. Avenue M, from Ocean avenue to Flatlands avenue.....	4,635
19. Avenue L, from East Twenty-fourth street to East Twenty-first street.....	840
20. East Thirty-first street, from East Broadway (Church avenue), to Flatlands avenue.....	13,041
21. Paerdegat basin, from Flatlands avenue to Jamaica bay.....	4,600
22. East Fourteenth street, from King's highway to the land of the water works.....	4,069
23. East Nineteenth street, from Avenue S to Gravesend Neck road	2,919
24. Sixty-eighth street, from Fort Hamilton avenue to Shore road	7,674
25. Sterling place (Butler street), from Schenectady avenue to Utica avenue.....	700

	Feet.
26. Sixty-sixth street, from New York bay to Twenty-second avenue	17,766
27. Eighty-fourth street, from First avenue to Fourth avenue; from Seventh avenue to Tenth avenue; from Twelfth avenue to Seventeenth avenue, and from Eighteenth avenue to Stillwell avenue.....	11,958
28. Eighty-fifth street, from Narrows avenue to Fifth avenue; from Fort Hamilton avenue to Tenth avenue; from Twelfth avenue to Waters avenue; from Fifteenth avenue to Sixteenth avenue, and from Eighteenth avenue to Stillwell avenue.....	12,891
29. Lincoln avenue, from Atlantic avenue to Conduit avenue....	2,216
30. Hemlock street, from Jamaica avenue to Atlantic avenue....	2,854
31. Gatling place, from Eighty-sixth street to Ninety-second street	1,404
32. Eighty-third street, from Tenth avenue to Stewart avenue, and from Fourth avenue to the Shore road.....	5,635
33. Railroad avenue, from Atlantic avenue to Fairfield avenue..	7,888
34. New York avenue, from Canarsie road or avenue to Newkirk avenue	1,659
35. Sherman street, from the southerly side of Reeves place, formerly Adams street, to the line dividing the land formerly of the Windsor Terrace Place Association, from the land late of Thomas Murphy.....	171
36. Engert avenue, from Graham avenue to Manhattan avenue..	519
37. Waterbury street, from Maujer street to Johnson avenue....	1,753
38. Crescent street, from Belmont avenue to a line about 190 feet 9 inches south of Blake avenue.....	1,291
39. Union street, from Washington avenue to New York avenue, and from the former City line to East New York avenue.	4,599
40. Approach to the Willink entrance of Prospect Park.....	751
41. Fifty-seventh street, from the former City line to a line about 460 feet southerly of Eighth avenue, and from Kowenhoven lane to Eighteenth avenue, and from Twentieth avenue to West street.....	8,798
42. Addition to Sunset Park, in the Eighth Ward.....	1,480
43. Eighth street, from Eighth avenue to Prospect Park, West (Ninth avenue).....	696
44. Cleveland street, from Pitkin avenue to New Lots road (avenue)	2,636
45. Land for approach to the Willink entrance, Prospect Park, as amended by excluding the property of the Brooklyn and Brighton Beach Railroad, and dividing the original map into two (2) parcels.....	730

	Feet.
46. Public park bounded by Bridge street, Tillary street, Jay street, and the northern line of a new street, in the Fourth Ward.....	492
47. A new street, bounded by Bridge street, Jay street, and a new park, in the Fourth Ward.....	493
48. Seventy-eighth street, from Narrows avenue to Stillwell avenue	17,014
49. West Third street, from Sheepshead Bay road to Canal avenue	1,477
50. Christopher street, from East New York avenue to New Lots avenue	6,102
51. Bay Sixteenth street, from Bath avenue to Cropsey avenue..	534
52. Bay Thirty-fourth street, from Eighty-sixth street to Cropsey avenue	2,230
53. Avenue E, from West street to Coney Island avenue.....	3,092
54. Dahlgreen place, from Eighty-sixth street to the United States Government Reservation.....	2,671
Total, 54 streets, comprising 216 maps.....	228,492
—or 43.275 miles.	

b—Draft damage maps.

These maps are used by the Commissioners of Estimate and Assessment to determine the amount of award for land and buildings taken in the opening of the street. The maps give every plot taken in street-opening proceedings, together with its dimensions, encroachments on the street, property-owners, etc.

The completion of these maps is attended with a considerable amount of detail work. In many cases the city map and other information and records obtainable are either meagre or unreliable; in these circumstances, to obtain the precise results attained involves an expenditure of a large amount of time and work.

	No. of Plots.	Area in Sq. Ft.
1. Hawthorne street, from Nostrand avenue to Albany avenue.....	4	174,900
2. Fifty-fourth street, from former City line to Fort Hamilton avenue.....	8	125,151
3. Battery avenue, from One Hundred and Seventh street to Eighty-sixth street.....	46	240,266
4. Prospect place, from Utica avenue to East New York avenue.....	22	331,918

	No. of Plots.	Area in Sq. Ft.
5. Dumont avenue, from its intersection with East Ninety-eighth street to its intersection with New Lots avenue.....	44	864,419
6. Ninth avenue, from Thirty-seventh street to Bay Ridge avenue.....	52	661,462
7. Avenue K, from East Sixteenth street to East Eighteenth street.....	5	48,000
8. Parrott place, from Seventh avenue to Ninety-second street.....	6	55,392
9. Sixty-first street, from Third avenue to Sixth avenue, and from Seventh avenue to Fort Hamilton avenue.....	14	254,022
10. Bedford avenue, from a point in the Eastern parkway where said Bedford avenue is opened, and extending in a southerly direction to Flatbush avenue	149	786,259
11. Bridgewater street, from Norman avenue to Meeker avenue	15	92,482
12. Thirteenth avenue, from Seventy-third street to Eighty-sixth street.....	16	268,800
13. East Fortieth street, from Avenue H to Flatlands avenue	21	240,048
14. Park place, from Utica avenue to East New York avenue	29	302,902
15. Fifty-second street, from former City line to the old road, from Flatbush to New Utrecht.....	30	464,633
16. East Twenty-first street, from Albermarle road to Regent place.....	5	26,641
17. Knickerbocker avenue, from Putnam avenue to Moffat street.....	13	204,400
18. Fifty-first street, from former City line to Ninth avenue	4	66,647
19. East Twenty-second street, from Avenue M to Avenue L.....	4	57,600
20. Sixty-seventh street, from Kowenhoven lane to Fort Hamilton avenue.....	25	160,249
21. Eighty-first street, from Fourth avenue to Fourteenth avenue.....	41	368,701
22. Forty-ninth street, from the former City line to West street.....	37	532,786
23. East Sixteenth street, from Avenue T to Avenue V.	5	101,400
24. East Seventeenth street, from Avenue S to Gravesend Neck road.....	40	249,845
25. East Eighteenth street, from Avenue S to Gravesend Neck road.....	9	181,377

	No. of Plots.	Area in Sq. Ft.
26. Stillwell avenue, from Surf avenue to Canal avenue.	13	208,412
27. Remsen avenue, from Utica avenue to Canarsie Bay Park	97	1,559,969
28. East Ninth street, from Avenue U to Avenue V....	4	46,800
29. East Fifteenth street, from King's highway to the land of the water works.....	13	242,370
30. Eightieth street, from Narrows avenue to Four- teenth avenue.....	40	578,076
31. East Eighth street, from Avenue T to Gravesend Neck road.....	9	139,515
32. East Thirteenth street, from Avenue T to Graves- end Neck road.....	8	145,832
33. East Seventh street, from Church avenue to Caton avenue	19	61,344
34. Bridge over Newtown creek at Manhattan avenue..	4	18,713
35. Ninety-fourth street, from Fourth avenue to Fort Hamilton avenue.....	21	41,107
36. Ninety-fifth street, from Fourth avenue to Fort Hamilton avenue.....	20	39,300
37. Ninety-seventh street, from Fourth avenue to Fort Hamilton avenue.....	22	33,625
38. Gubner street, from Eighty-sixth street to Seventh avenue	12	67,934
39. East Twelfth street, from Avenue T to Sheepshead Bay road.....	25	198,774
40. Homecrest avenue, from Avenue T to Gravesend Neck road.....	8	148,010
41. De Russey street, from Eighty-sixth street to Dyker Beach Park.....	17	73,200
42. Euclid avenue, from Belmont avenue to Jamaica avenue	18	345,395
43. New York avenue, from Malbone street to Church avenue	78	383,417
44. Bay Eighth street, from Benson avenue to Cropsey avenue	3	92,683
45. Eleventh avenue, from Eighty-sixth street to Dyker Beach Park.....	17	95,600
46. Rutland road, from Canarsie avenue or road to Remsen avenue.....	26	314,966
47. Eighty-ninth street, from Fourth avenue to Fifth avenue	1	21,438
48. Ninetieth street, from Third avenue to Seventh avenue	8	158,846
49. Ninety-first street, from First avenue to Fifth avenue	6	144,591

	No. of Plots.	Area in Sq. Ft.
50. Eighty-third street, from Tenth avenue to Stewart avenue and between Fourth avenue and the Shore road.....	28	338,075
51. Twelfth avenue, from Seventy-third street to Kings highway, and from Eighty-sixth street to Dyker Beach Park.....	23	261,210

Total, 51 streets comprising 153 maps..... 1,194 12,619,502

—covering a length of 34.675 miles, and comprising in all 5,047,790 city lots.

c—Draft benefit maps.

These maps show the limits of assessment for opening a street; they give within these limits every lot, with its number, dimensions, owner, etc. The maps are used by the Commissioners of Estimate and Assessment to determine the amount of assessment to be paid on every lot within the assessment area. These maps are compiled in a large measure from the maps of the Department of Taxes and Assessments.

	Plots.
1. East Seventeenth street, from Albemarle road to Beverley road	25
2. Fourteenth avenue, from Eighty-sixth street to Cropsey avenue	97
3. Montgomery street, from the division line between the former City line of Brooklyn and the former Town of Flatbush, where the same crosses Montgomery street, between Franklin avenue and Bedford avenue (Perry avenue) to East New York avenue.....	260
4. Seventy-first street, from Third avenue to Shore road.....	59
5. Church avenue, from Flatbush avenue to Brooklyn avenue..	165
6. Clinton avenue, from Gates avenue to Willoughby avenue...	124
7. West street, from Franklin avenue to Forty-third street....	10
8. Ashford street, from Atlantic avenue to New Lots avenue...	154
9. Pilling street, from Evergreen avenue to the tracks of the Manhattan Beach Railroad.....	3
10. Starr street, from St. Nicholas avenue to the County line....	14
11. Third avenue, from Sixtieth street to the Shore road.....	1,222
12. East Twenty-first street, from Avenue M to Avenue K.....	29
13. Seventy-fourth street, from Second avenue to Seventh avenue	114
14. Seventieth street, from Fourteenth avenue to Twenty-second avenue	196

	Plots.
15. Nineteenth street, from Vanderbilt (avenue) street to the old City line.....	25
16. Fifty-fourth street, from former City line to Fort Hamilton avenue	102
17. Prospect avenue, from Eleventh avenue to Terrace place....	1,445
18. Avenue K, from East Sixteenth street to East Eighteenth street	27
19. Hubbard place, from East Fortieth street to Flatbush avenue	42
20. Prospect place, from Utica avenue to East New York avenue	232
21. Knickerbocker avenue, from Putnam avenue to Moffat street	223
22. Seventy-seventh street, from Shore road to Seventh avenue..	136
23. Tenth avenue, from Thirty-eighth street to Fifty-third street, and from Fort Hamilton avenue to Seventh avenue.....	970
24. Rochester avenue, from East New York avenue to the former City line of the City of Brooklyn.....	233
25. Clarkson (avenue) street, from New York avenue to the easterly limit of Clarkson street.....	207
26. Parrott place, from Seventh avenue to Ninety-second street..	41
27. Hawthorne street, from Nostrand avenue to Albany avenue..	254
28. Thirteenth avenue, from Seventy-third street to Eighty-sixth street	350
29. Eleventh avenue, from Fifteenth street to Terrace place....	128
30. Nineteenth street, from high water mark to the bulk-head line.....	26
31. East Twenty-second street, from Avenue M to Avenue L....	5
32. Butler street, from Flatbush avenue to Nostrand avenue....	176
33. Fifty-first street, from the former City line to Ninth avenue..	85
34. Sixty-seventh street, from Kowenhoven lane to Fort Hamilton avenue.....	30
Total, 34 streets comprising 34 maps.....	7,209

d—Final damage and benefit maps.

The final damage maps are in duplicate and the final benefit maps in triplicate.

These are the last maps made for a street opening proceeding. They are copies of the draft damage and draft benefit maps, with the addition of any modifications that may have been decided upon by the commissioners after their public hearings. The maps are kept in book form, bound with the commissioners' report, which is placed on file at the confirmation of a street opening proceeding.

1. East Seventeenth street, from Albemarle road to Beverley road	7
2. Fourteenth avenue, from Eighty-sixth street to Cropsey avenue	10
3. Montgomery street, from the division line between the former City line of Brooklyn and the former Town of Flatbush, where the same crosses Montgomery street, between Franklin avenue and Bedford avenue (Perry avenue) to East New York avenue.....	42
4. Seventy-first street, from Third avenue to Shore road.....	20
5. Church avenue, from Flatbush avenue to Brooklyn avenue..	31
6. Clinton avenue, from Gates avenue to Willoughby avenue...	28
7. West street, from Franklin avenue to Forty-third street.....	5
8. Ashford street, from Atlantic avenue to New Lots avenue...	25
9. Pilling street, from Evergreen avenue to the tracks of the Manhattan Beach Railroad.....	5
10. Starr street, from St. Nicholas avenue to the County line..	10
11. Third avenue, from Sixtieth street to the Shore road.....	85
12. East Twenty-first street, from Avenue M to Avenue K.....	10
13. Seventy-fourth street, from Second avenue to Seventh avenue	20
14. Seventieth street, from Fourteenth avenue to Twenty-second avenue	25
15. Nineteenth street, from Vanderbilt (avenue) street to the old City line.....	5
16. Fifty-fourth street, from former City line to Fort Hamilton avenue	10
17. Prospect avenue, from Eleventh avenue to Terrace place....	38
18. Avenue K, from East Sixteenth street to East Eighteenth street	8
19. Hubbard place, from East Fortieth street to Flatbush avenue	5
20. Prospect place, from Utica avenue to East New York avenue	30
21. Knickerbocker avenue, from Putnam avenue to Moffat street	20
22. Seventy-seventh street, from Shore road to Seventh avenue..	28
23. Tenth avenue, from Thirty-eighth street to Fifty-third street, and from Fort Hamilton avenue to Seventh avenue.....	63
24. Rochester avenue, from East New York avenue to the former City line of the City of Brooklyn.....	8
25. Clarkson (avenue) street, from New York avenue to the easterly limit of Clarkson street.....	41
26. Parrott place, from Seventh avenue to Ninety-second street..	7
27. Hawthorne street, from Nostrand avenue to Albany avenue..	16
28. Thirteenth avenue, from Seventy-third street to Eighty-sixth street	16
29. Eleventh avenue, from Fifteenth street to Terrace place.....	16
30. Nineteenth street, from high-water mark to the bulkhead line	8

	Sheets.
31. East Twenty-second street, from Avenue M to Avenue L....	5
32. Butler street, from Flatbush avenue to Nostrand avenue....	16
Total, 32 streets, comprising.....	<u>663</u>

c—Rule maps and technical descriptions for closing streets and avenues.

No rule maps of this nature were requested during the year.

SUMMARY OF STREET OPENING WORK.

Street opening proceedings pending January 1, 1902.....	156
Initiated during the year 1902.....	23
Total	<u>179</u>
Confirmed during the year 1902.....	19
Street opening proceedings pending January 1, 1903..	<u>160</u>
Rule Maps requested to January 1, 1902.....	33
Requested during the year 1902.....	32
Total	<u>65</u>
Furnished to December 31, 1902.....	54
Total still requested to January 1, 1903.....	<u>11</u>
Draft Damage Maps requested to January 1, 1902.....	22
Requested during the year 1902.....	50
Total	<u>72</u>
Furnished to December 31, 1902.....	51
Total still requested to January 1, 1903.....	<u>21</u>
Draft Benefit Maps requested to January 1, 1902.....	2
Requested during the year 1902.....	38
Total	<u>40</u>
Furnished to December 31, 1902.....	34
Total still requested to January 1, 1903.....	<u>6</u>

Final Damage and Benefit Maps requested to January 1, 1902...	2
Requested during the year 1902.....	38
Total	40
Furnished to December 31, 1902.....	32
Total still requested to January 1, 1903.....	8

In addition to the work above noted, considerable time was employed in modifying draft damage maps and final damage and benefit maps of streets. These modifications were requested by the Commissioners of Estimate and Assessment in accordance with testimony given at their public hearings. As almost none of this work was done by the office in former years it represents a distinct addition to the work performed.

This work was always to be done at once; thus it served to interrupt and break into the course of other work. The work had to be done carefully, and required the services of the best men.

These changes were made not only on the maps furnished to the Commissioners of Estimate and Assessment, but also on the two (2) office copies of each map. The changes are as follows:

I.—Draft damage maps.

The maps of ten (10) different streets were sent in all twelve (12) times. Including office copies the work involved changes of 36 maps.

II.—Final damage and benefit maps.

The maps of five (5) different streets were sent in all nine (9) times. Including office copies the work involved changes of 23 maps.

TOTALS OF STREET OPENING WORK.

	Items.	Maps.
New work.....	171	403 and 663 sheets in addition.
Changes	21	59
Grand total.....	192	462 and 663 sheets in addition.

RÉSUMÉ OF WORK COMPLETED.

All reports on petitions for street opening and improvements.

All maps and technical descriptions for public hearings.

All filed maps requested in the year 1902.

All rule maps requested prior to June 2, 1902.

All draft damage maps requested prior to May 20, 1902.

All draft benefit maps requested prior to October 23, 1902.

All final damage and benefit maps requested prior to October 23, 1902.

Subsequent to the dates above given a number of maps have been delivered in each case.

IV.—To keep a record of everything pertaining to the above items of topographical work.

As far as time permits, complete records are made of the current work. Of every map furnished by the office a copy is kept on record.

For the years prior to 1898 the records were distributed over different offices. Very often they are incomplete or cannot be found. General systematic searches are here of great value. Much more time than is now available could profitably be employed to collect and systematically record the information obtainable from all these records. Time was found only to search for such records and to determine omissions as they were necessary for street opening work.

Including current work, this office should have complete information of the following:

I.—Records affecting the determination of lines and elevations of streets.

Many street lines have never been accurately determined.

A record is kept of all monument stones that can be found, and their position and condition are noted. Twenty (20) monuments were reset.

Monument stones set in the ground to determine the lines of streets are often disturbed in the course of improvements. The position of many points and lines were thus lost for want of precise determination before the stones were disturbed. Whenever information was obtained in time, the necessary accurate locations were made.

The established elevations are properly recorded. Many of these are found to be no longer absolutely correct.

II.—Records affecting changes in the street system of the city in regard to the lines of streets and their elevations.

This should show in every instance the precise figures and give the authority and date of the change.

III.—Records showing legally opened streets and all street opening proceedings pending.

This knowledge is often very valuable financially. On this subject the records of the office are believed to be the most comprehensive in existence. Much remains, however, that is not included and properly recorded.

ADDITIONAL RESULTS OF TOPOGRAPHICAL WORK.

Besides furnishing the maps required for changes in lines and elevations of streets and for street openings, etc., the work of the Topographical Bureau has a more general and permanent basis.

The records of the office serve to act as an authority on topographical work; they are consulted by other departments of the City, by surveyors and by private citizens.

Accuracy of field and office work in monumenting work and in the preparation of street opening maps is giving precisions to the lines of streets and of private property.

GRAND TOTALS FOR THE TWELVE MONTHS ENDING 1902.

<i>Reports.</i>		Totals.
1. Reports for initiating street opening proceedings.....		270
2. Reports on changes of lines, laying out, closing, etc., and changes of grades.....		62
3. Miscellaneous reports.....		435
Total		<u>767</u>

<i>Maps Completed.</i>		
	Items.	Maps.
Maps for adoption and filing	65	157
Street opening maps.....	171	403 and 663 sheets in addition.
Grand total.....	<u>236</u>	<u>560 and 663 sheets in addition.</u>

Twenty-one changes in 59 street opening maps, in addition to above totals.

Comparison of work performed for the years 1901 and 1902 respectively:

I.—Determination and fixing of street lines.

No special maps are furnished for this work.

Results of the work are increased accuracy of the records of the office, and a corresponding increase in the accuracy of all information and maps furnished by the office.

This year less time was available for the work, with the result that for both field and office less was accomplished than in the preceding year.

II.—Maps affecting changes in the street system of the city in regard to the lines of the streets and their elevations:

	MAPS FOR ADOPTION.	MAPS FOR FILING.
1901.....	18	8
1902.....	58	7
Increase for 1902	40	..

Note.—This comprises all the maps requested.

III.—Maps for street openings:

A.—Rule Maps.

	NUMBER OF STREETS.	LENGTH IN FEET.	LENGTH IN MILES.
1901.....	60	199,669	37,816
1902.....	54	228,492	43,275
Difference.....	6	28,823	5,459

Note.—For three (3) months of the year, work on rule maps had to be interrupted in favor of other work. At the end of this year but eleven (11) rule maps were not delivered of all that were requested.

B.—Draft Damage Maps.

	NUMBER OF STREETS.	NUMBER OF PLOTS.	AREA IN SQUARE FEET.	AREA IN CITY LOTS.	LENGTH IN MILES.
1901.....	32	863	10,278,690	4,111.476	27.507
1902	51	1,194	12,619,502	5,047.790	34.675
Increase for 1902.	19	331	2,340,812	936.314	7.168

Note.—Considerably more work has been put on each draft damage map this year.

C.—Draft Benefit Maps.

	NUMBER OF STREETS.	NUMBER OF PLOTS.
1901.....	12	2,156
1902.....	34	7,209
Increase for 1902.....	22	5,053

D.—Final Damage and Benefit Maps.

	NUMBER OF STREETS.	NUMBER OF SHEETS.
1901.....	12	212
1902.....	32	663
Increase for 1902.....	20	451

Reports.	Number.
1901	406 (for the Brooklyn office only.)
1902	767
Increase for 1902.....	361

The above statement shows a great increase in the work furnished. Maps for adoption have been increased over 200 per cent.; large increases are found throughout all the items of street opening work.

This is the first year that the Topographical Bureau is a local office. The scope and field of the work of the former office, which was but a branch office, have been greatly enlarged. Larger measures of public improvements, such as

bridge approaches, parkways, etc., have been hardly touched upon; in former years all measures of this nature were considered and reported on by the Topographical Bureau.

Very respectfully submitted,

GEO. J. BISCHOF,
Assistant Engineer in Charge.

TABLE

*Showing Areas, Lengths and Percentages of the Various
January*

WARD.	LENGTH IN FEET.								Total.
	Asphalt	Granite.	Cobble.	Belgian.	Macadam.	Brick.	Medina.	Wood	
First.....	32,641	11,652	3,658	5,751	.....	....	....	437	54,139
Second.....	.....	17,075	6,273	824	.....	262	....	....	24,434
Third.....	17,072	14,849	5,503	.....	.....	971	....	....	38,400
Fourth.....	3,031	19,420	8,831	.....	.....	....	503	....	31,785
Fifth.....	214	13,178	19,747	.....	.....	....	....	....	33,139
Sixth.....	15,327	24,998	20,312	7,670	.....	....	....	....	68,307
Seventh.....	32,396	24,142	42,835	1,548	.....	....	....	....	100,921
Eighth.....	17,445	33,087	93,053	25,655	.....	....	....	....	169,240
Ninth.....	38,385	31,622	20,343	5,304	3,100	2,511	....	....	101,265
Tenth.....	10,580	26,866	24,419	5,733	.....	....	....	....	67,598
Eleventh.....	4,057	20,341	23,461	1,390	.....	517	....	....	49,766
Twelfth.....	2,523	33,418	50,447	.....	.....	....	....	....	86,388
Thirteenth.....	9,288	18,931	27,336	.....	.....	....	441	....	55,996
Fourteenth.....	5,537	38,148	16,992	4,983	.....	....	....	....	65,660
Fifteenth.....	11,350	16,660	28,036	655	.....	931	....	....	57,632
Sixteenth.....	10,877	18,054	29,205	1,725	.....	....	....	....	59,871
Seventeenth.....	15,906	38,816	50,428	5,949	.....	2,499	....	....	113,598
Eighteenth.....	2,833	28,348	35,372	a 9,674	.....	....	....	....	76,227
Nineteenth.....	27,547	28,296	29,880	2,475	.....	432	....	....	88,630
Twentieth.....	27,741	28,454	18,742	993	.....	518	....	....	76,448
Twenty-first.....	23,001	17,857	61,434	.....	.....	....	....	....	102,292
Twenty-second..	50,771	26,023	51,942	29,684	.....	....	....	....	158,420
Twenty-third....	72,402	19,560	51,077	652	358	728	....	....	147,777
Twenty-fourth..	43,031	7,565	68,059	15,027	11,470	210	....	....	145,362
Twenty-fifth....	25,928	18,609	78,105	2,889	2,262	....	....	....	127,793
Twenty-sixth....	49,042	27,349	11,732	b 95,717	17,525	7,969	....	....	209,334

(a) Includes 1,636 of trap.

(b) Includes 4,118 of trap.

NO. I.

Kinds of Pavements in the Borough of Brooklyn, New York,
I, 1903.

AREA IN SQUARE YARDS.								
Asphalt.	Granite.	Cobble.	Belgian.	Macadam.	Brick.	Medina.	Wood.	Total.
89,177	42,677	10,782	17,651	.....	.....	....	1,152	161,439
.....	51,796	15,027	3,117	.....	620	....	....	70,560
53,385	66,250	17,959	.....	.....	2,884	....	....	140,478
7,693	65,077	24,231	.....	.....	.....	1,313	....	98,314
715	40,615	47,047	.....	.....	.....	....	....	88,377
47,108	91,327	66,010	29,414	.....	.....	....	....	233,859
126,185	101,351	146,191	4,993	.....	.....	....	....	378,720
65,231	168,538	328,873	97,603	.....	.....	....	....	660,245
149,324	148,848	83,117	17,686	20,667	10,301	....	....	429,943
36,031	93,971	83,352	19,118	.....	.....	....	....	232,472
13,994	80,068	73,890	5,251	.....	1,955	....	....	176,058
7,653	121,713	158,287	.....	.....	.....	....	....	287,653
32,177	70,199	89,483	.....	.....	.....	1,443	....	193,302
18,637	133,596	56,148	16,061	.....	.....	....	....	224,442
38,627	70,194	95,697	3,057	.....	3,103	....	....	210,678
39,709	69,507	98,109	8,050	.....	.....	....	....	215,375
53,493	155,586	163,091	24,314	.....	6,843	....	....	403,327
9,671	104,854	121,575	c 35,936	.....	.....	....	....	272,036
106,384	112,388	116,817	9,056	.....	1,152	....	....	345,797
106,772	116,912	78,289	3,692	.....	1,955	....	....	307,620
88,131	73,770	223,522	.....	.....	.....	....	....	385,423
180,886	126,127	119,907	112,029	.....	.....	....	....	538,949
271,279	59,987	207,544	2,463	1,352	3,169	....	....	545,794
170,278	28,660	240,891	75,920	62,961	1,016	....	....	579,726
91,576	82,272	298,127	10,310	960	.....	....	....	483,245
168,400	138,229	41,910	d 304,864	57,872	47,919	....	....	753,224

(c) Includes 5,387 of trap.

(d) Includes 13,499 of trap.

TABLE NO. I

WARD.	LENGTH IN FEET.								Total.
	Asphalt.	Granite.	Cobble.	Belgian.	Macadam.	Brick.	Medina.	Wood	
Twenty-seventh.	7,784	24,419	38,469	8,641	.....	612	....	....	79,925
Twenty-eighth ..	12,655	23,830	104,766	5,092	.....	836	....	....	147,179
Twenty-ninth ...	40,180	.....	.....	.....	53,141	2,066	....	....	95,387
Thirtieth	8,359	545	.....	13,160	213,866	4,949	....	....	240,879
Thirty-first	2,012	10,346	.....	....	149,780	....	....	....	162,138
Thirty-second. ...	.....	.....	.....	.....	8,158	....	....	....	8,158
Totals	619,915	662,468	1,023,462	251,191	459,660	26,011	944	437	3,044,088
Miles.....	117.41	125.47	193.83	47.57	87.06	4.93	0.18	0.08	576.53
Percentage of } Pavement ... }	20.37	21.76	33.62	8.25	15 10	0.86	0.03	0.01	100.00

—(Continued).

AREA IN SQUARE YARDS.								
Asphalt.	Granite.	Cobble.	Belgian.	Macadam.	Brick.	Medina.	Wood.	Total.
25,078	88,451	131,019	30,194	.....	2,040	....	....	276,782
42,767	92,699	357,482	18,019	.....	3,901	....	....	514,868
140,861	3,000	.....	.....	215,800	10,567	....	....	370,228
27,513	4,018	.....	42,774	691,850	17,797	....	....	783,952
15,420	64,605	.....	.....	463,208	.....	....	....	543,233
.....	.....	.....	.....	23,758	.....	....	....	23,758
2,224,155	2,668,185	3,494,377	891,572	1,538,428	115,252	2,756	1,152	10,935,877
.....								
.....								

TABLE

*Showing Mileage and Percentage of the Various Pavements in
to January*

YEAR.	ASPHALT.		GRANITE.		COBBLE.	
	Miles.	Per Cent.	Miles.	Per Cent.	Miles.	Per Cent.
January 1, 1880.....	7.129	2.130	16.630	4.950	292.928	87.250
January 1, 1881.....	7.039	2.080	17.050	5.060	293.458	88.210
January 1, 1882.....	6.659	1.970	17.430	5.140	295.548	87.170
January 1, 1883.....	7.379	2.170	19.230	5.660	294.348	86.630
January 1, 1884.....	7.379	2.160	19.230	5.630	295.718	86.660
January 1, 1885.....	7.379	2.140	19.280	5.580	299.078	85.760
January 1, 1886....	6.459	1.860	22.050	6.350	299.658	86.310
January 1, 1887.....	6.459	1.820	24.410	6.870	304.398	85.650
January 1, 1888.....	6.459	1.790	27.070	7.490	307.871	85.160
January 1, 1889.....	10.597	2.810	36.382	9.640	304.865	80.720
January 1, 1890.....	10.847	2.820	58.252	15.060	289.211	74.770
January 1, 1891.....	11.676	2.970	74.425	18.780	279.915	70.630
January 1, 1892.....	12.069	2.970	81.528	20.070	280.543	69.080
January 1, 1893.....	13.049	3.100	88.792	21.060	279.263	66.240
January 1, 1894.....	14.078	3.250	91.029	20.980	284.136	65.480
January 1, 1895.....	18.845	3.880	98.870	20.340	284.321	58.490
January 1, 1896..	27.570	5.530	109.131	21.900	269.102	54.000
January 1, 1897.....	38.162	7.420	110.552	21.480	261.486	50.800
January 1, 1898.....	61.590	11.750	111.165	21.210	241.784	46.120
January 1, 1899.....	65.990	12.256	112.870	20.962	237.960	44.193
January 1, 1900.....	68.850	12.559	114.620	20.916	236.850	43.224
January 1, 1901.....	82.260	14.664	*117.140	20.881	227.300	40.518
January 1, 1902.....	95.140	16.790	119.870	21.160	216.800	38.260
January 1, 1903.....	117.410	20.370	125.470	21.760	193.830	33.620

* Includes 0.13 miles Oblong Trap.

No. 2.

*the City and Borough of Brooklyn from January 1, 1880,
1, 1903.*

BELGIAN.		MACAULAM.		BR'CK.		MEDINA.		WOOD.		TOTAL.
Miles.	Per Cent.	Miles.	Per Cent.	Miles.	Per Cent.	Miles.	Per Cent.	Miles.	Per Cent.	
17.200	5.120	0.798	0.230	....	....	....	....	1.050	0.320	335.735
17.200	5.110	0.798	0.250	....	....	....	....	0.720	0.210	336.265
17.250	5.050	1.398	0.420	....	....	....	....	0.720	0.210	339.005
17.250	5.070	1.588	0.470	....	....	....	....	....	....	339.795
17.250	5.060	1.688	0.490	....	....	....	....	....	....	341.265
17.250	5.040	1.688	0.480	....	....	....	....	....	....	344.675
17.360	5.000	1.688	0.480	....	....	....	....	....	....	347.215
17.360	4.870	2.816	0.770	....	....	....	....	....	....	355.375
17.360	4.800	2.816	0.760	....	....	....	....	....	....	361.508
23.029	6.090	2.816	0.740	....	....	....	....	....	....	377.689
25.652	6.630	2.816	0.720	....	....	....	....	....	....	386.778
27.480	6.930	2.816	0.690	....	....	....	....	....	....	396.312
29.229	7.210	2.816	0.670	....	....	....	....	....	....	405.185
37.646	8.930	2.816	0.670	....	....	....	....	....	....	421.566
41.851	9.640	2.816	0.630	....	....	....	....	....	....	433.910
42.157	8.670	41.875	8.620	....	....	....	....	....	....	426.069
42.833	8.590	49.406	9.910	0.321	0.070	....	....	....	....	498.363
44.463	8.640	58.893	11.440	1.105	0.220	....	....	....	....	514.661
44.351	8.460	62.825	11.990	2.440	0.470	....	....	....	....	524.155
45.330	8.418	72.520	13.469	3.780	0.702	....	....	....	....	538.450
45.330	8.273	78.570	14.333	3.780	0.689	....	....	....	....	547.970
46.860	8.353	82.310	14.673	5.110	0.911	....	....	....	....	560.980
† 47.350	8.350	82.100	14.490	5.310	0.940	....	....	....	....	566.660
† 47.570	8.250	87.060	15.100	4.930	0.863	0.180	0.030	0.080	0.010	576.530

† Includes 0.78 miles Trap Block.

‡ Includes 1.09 miles Trap Block.

TABLE NO. 3.
Showing the Area of the Different Wards of the Borough of Brooklyn.

	BLOCK AREA.	STREET AREA.	PARK AREA.	CEMETERY AREA.	CANAL AREA.	MISCELLANEOUS.	TOTAL AREA, ACRES.
First.....	163.3	66.9	2.8	.....	.....	.....	233.0
Second.....	66.8	30.9	.....	.....	.....	.....	97.7
Third.....	105.8	54.6	.....	.....	.....	.....	161.4
Fourth.....	71.3	40.0	.....	.....	.....	.....	111.3
Fifth.....	83.8	35.6	.....	.....	.....	.....	119.4
Sixth.....	201.9	101.0	.....	.....	.....	.....	302.9
Seventh.....	311.7	146.8	.....	.....	.....	.....	458.5
Eighth.....	929.3	436.2	15.6	462.1	.....	.....	1,843.2
Ninth.....	356.8	195.1	*71.7	.....	.....	.....	623.6
Tenth.....	215.9	94.7	1.9	.....	6.2	.....	318.7
Eleventh.....	115.7	68.9	28.7	.....	.....	39.3 Navy Yard.....	252.6
Twelfth.....	453.4	161.1	5.3	.....	2.5	40.8 Atlantic Basin.....	663.1
Thirteenth.....	152.7	77.6	.....	.....	.....	.....	230.3
Fourteenth.....	186.7	95.9	.....	.....	.....	.....	282.6
Fifteenth.....	159.7	85.1	.....	.....	.....	.....	244.8
Sixteenth.....	157.3	87.5	.....	.....	.....	.....	244.8
Seventeenth.....	553.3	253.9	9.1	.....	7.0	.....	823.3
Eighteenth.....	568.6	271.7	6.9	.....	25.8	.....	873.0

Nineteenth.	223.2	151.8	0.04	.....	4.3	17.3	Wallabout Market—17.2 U. S. Hospital	413.84
Twentieth.....	203.1	118.1	14.9	.....	.....	96.8	Navy Yard—28.6 Wallabout Market.	461.5
Twenty-first.....	344.4	158.8	.....	.....	.....	.....	.....	483.2
Twenty-second.....	584.9	292.7	482.8	.....	11.2	.....	.....	1,361.6
Twenty-third.....	484.9	239.3	7.8	.....	.....	.....	.....	736.0
Twenty-fourth.....	799.7	286.7	12.1	.....	.....	.....	.....	1,198.5
Twenty-fifth.....	367.2	197.4	3.2	.....	.....	.....	.....	567.8
Twenty-sixth.....	2,343.6	1,155.4	27.3	.....	47.0	16.9	Reservoir Lands	3,590.2
Twenty-seventh.....	261.5	128.4	10.8	.....	.....	.....	.....	400.7
Twenty-eighth.....	502.3	267.5	2.8	111.8	.....	.....	.....	884.4
Twenty-ninth.....	2,430.7	1,250.3	.....	54.2	.....	36.8	.....	3,800.0
Thirtieth.....	3,326.9	1,589.7	346.0	32.0	.....	109.5	Fort Hamilton	5,404.1
Thirty-first.....	4,132.3	1,999.9	.....	.....	180.1	.....	.....	6,312.3
Thirty-second.....	3,565.1	1,825.3	.....	.....	89.1	.....	.....	†5,479.5
Acre.	21,417.8	11,973.8	1,049.74	660.1	373.2	403.2	.....	38,077.84
Square Miles.....	38.156	18.865	1.640	1.030	0.582	0.630	.....	60.903

† Does not include marsh land nor islands in Jamaica Bay which belong to this Ward.

* Includes East Side Lands.

TABLE NO. 4.

Statement Showing Amount of Asphalt Laid on Completed Contracts During the Year Ending December 31, 1901.

	FUND PAID FROM.	CHARACTER.	FOUNDATION.	THICKNESS.		PAVEMENT REPLACED.	PAVEMENT, SQUARE YARDS.	PRICE PER SQUARE YARD, INCLUDING FOUNDATION.	CURB, LINEAR FEET.		EXCAVATION, CUBIC YARDS.	EMBANKMENT, CUBIC YARDS.	LENGTH.	WIDTH ROAD WAY.	INSTECTION		TOTAL COST.	WHEN COMPLETED.	WHEN ESTIMATED.	CONTRACTOR.
				Binder.	Wearing Surface.				New.	Old.					Amount.	Per Cent.				
Abbeelen street, Broadway to Bushwick avenue.....	Repaving Bond Fund.....	Trinidad.....	5" concrete.....	1"	2"	Cobblestone.....	2,022	\$1 55	898	311	.....	.....	604	30	864 00	1.58	\$4,189 98	Sept. 1	Nov. 1	Cranford Company.
Amity avenue, Eastern parkway to Lincoln road.....	".....	Trinidad and Venezuela. }	".....	1"	2"	".....	10,581	1 64	4,427	283	.....	.....	2,675	44.34	228 00	1.04	22,030 67	" 8	Oct. 22	Uxale Asphalt Paving Company.
Albion road, East Thirteenth street to Coney Island avenue.....	Private contract.....	Trinidad.....	".....	1"	2"	New.....	4,000	.....	.....	.....	.....	.....	920	.....	.....	.....	.....	.....	.....	"
Chauncey street, Fulton street to Reid avenue.....	Repaving Bond Fund.....	".....	".....	1"	2"	Cobblestone.....	7,143	1 50	2,869	638	.....	.....	1,821	34	76 00	0.53	14,241 58	Sept. 8	Sept. 29	Cranford Company.
Cermont avenue, Atlantic avenue to Flushing avenue.....	".....	".....	Cobblestone.....	1"	2"	".....	25,366	1 15	9,549	1,169	.....	.....	5,466	42	285 00	0.8	25,403 08	Aug. 4	Oct. 13	"
Concordia street, Union street to Humboldt street.....	".....	".....	".....	1"	2"	".....	7,622	1 55	4,977	365	.....	.....	2,335	30	80 00	0.51	17,830 10	" 4	Aug. 28	"
Cumbeberry street, Fulton street to Columbia Heights.....	".....	".....	5" concrete.....	1"	2"	".....	3,015	1 56	1,841	275	.....	.....	1,145	24	30 00	0.55	10,553 21	Nov. 6	Dec. 4	"
10th avenue, East Seventeenth street to East Eighteenth street.....	Private contract.....	".....	".....	1"	2"	New.....	980	.....	.....	.....	.....	.....	210	42	.....	.....	.....	.....	.....	"
Decker street, Howard avenue to Bushwick avenue.....	Repaving Bond Fund.....	Obispo.....	".....	1"	2"	Cobblestone.....	10,493	1 93	3,924	1,415	.....	.....	2,848	34	180 00	0.76	27,680 26	June 3	Sept. 18	Interstate Paving Company.
DeKall avenue, Fulton street to Clinton avenue.....	".....	Alcatraz.....	".....	1"	2"	".....	9,028	2 06	6,739	314	.....	.....	3,942	34	192 05	0.73	26,403 11	July 1	Aug. 13	Brooklyn Alcatraz Asphalt Company.
East Eleventh street, Beverly road to Church avenue.....	Private contract.....	Trinidad.....	".....	1"	2"	New.....	3,900	.....	.....	.....	.....	.....	1,100	32	.....	.....	.....	.....	.....	Uxale Asphalt Paving Company.
East Twelfth street, Beverly road to Church avenue.....	".....	".....	".....	1"	2"	".....	4,440	.....	.....	.....	.....	.....	1,180	32	.....	.....	.....	.....	.....	"
East Thirteenth street, Beverly road to Church avenue.....	".....	".....	".....	1"	2"	".....	4,500	.....	.....	.....	.....	.....	1,270	32	.....	.....	.....	.....	.....	"
Eighth avenue, Fourth street to Eighth street.....	Repaving Bond Fund.....	Trinidad and Venezuela. }	".....	1"	2"	Cobblestone.....	4,877	1 56	1,525	321	.....	.....	1,058	42	144 00	1.53	9,395 50	Oct. 16	Dec. 18	"
Eighth avenue, Eighth street to Sixteenth street.....	".....	Alcatraz.....	".....	1"	2"	".....	12,178	1 56	4,210	782	.....	.....	3,803	42	172 00	0.72	23,762 35	" 24	Nov. 6	Brooklyn Alcatraz Asphalt Company.
Thirteenth street, Eighth avenue to Prospect Park, West.....	Private contract.....	Trinidad.....	".....	1"	2"	".....	800	.....	.....	.....	.....	.....	240	30	.....	.....	.....	.....	.....	Cranford Company.
Emerson street, 200 feet south of Willoughby avenue.....	Repaving Bond Fund.....	Obispo.....	".....	1"	2"	".....	3,843	1 93	1,341	676	.....	.....	1,095	30, 34	76 00	0.81	9,374 11	July 8	Sept. 29	Interstate Paving Company.
Evergreen avenue, Ralph street to Grove street, Elder street to Covert street, Mollat street to Chauncey street.....	".....	Alcatraz.....	Asphalt, 5" concrete. } Granite, 6" concrete. }	1"	2"	".....	Asphalt, 10,625 } Granite, 6,110 }	3 60	3,798	.....	.....	.....	Asphalt, 4,140 } Granite, 4,163 }	50	436 00	0.68	63,729 39	Nov. 12, 1901	June 3	Brooklyn Alcatraz Asphalt Company.
Ralph street, Evergreen avenue to 200 feet east.....	Private contract.....	Obispo.....	5" concrete.....	1"	2"	".....	9,272	1 93	3,836	970	.....	.....	2,471	34	136 00	0.61	22,677 09	Aug. 26	Nov. 1	Interstate Paving Company.
Covert street, Evergreen avenue to 100 feet east.....	".....	Alcatraz.....	".....	1"	2"	Cobblestone and granite.....	26,603	1 68	4,061	4,882	5,774	7,247	5,574	60	548 00	0.86	63,764 45	" 7	" 1	Brooklyn Alcatraz Asphalt Company.
Fifteenth street, Coney Island avenue Prospect Park, West, to circle at Fort Hamilton avenue.....	".....	".....	".....	1"	2"	Cobblestone.....	2,402	1 56	734	623	.....	.....	726	30	76 00	1.53	4,935 16	Nov. 14	Dec. 20	"
Floyd street, Nostrand avenue to Throop avenue.....	".....	Trinidad.....	".....	1"	2"	".....	7,120	1 86	4,771	1,427	.....	.....	3,390	4	176 00	0.95	12,105 79	Oct. 26	Nov. 29	Cranford Company.
Fourth avenue, Fortieth street to Sixtieth street.....	".....	Obispo.....	".....	1"	2"	".....	2,200	1 93	814	578	.....	.....	767	30, 34	56 00	1.01	5,518 80	July 14	Sept. 23	Interstate Paving Company.
Fourth avenue, Fortieth street to Sixtieth street.....	".....	".....	".....	1"	2"	".....	4,292	1 93	1,965	446	.....	.....	1,255	34, 30	68 00	0.63	10,714 69	" 7	Oct. 4	"
Fourth avenue, Fortieth street to Sixtieth street.....	".....	Trinidad.....	".....	1"	2"	".....	5,817	1 68	2,586	1,320	.....	.....	2,026	24, 27	56 00	0.43	12,931 68	Sept. 1	Sept. 17	Cranford Company.
Central avenue, Hart street to Suydam street.....	".....	".....	".....	1"	2"	".....	10,834	1 66	3,509	2,165	.....	.....	2,992	34	14 00	0.66	22,571 45	Oct. 2	Nov. 14	"
Herkimer street, Nostrand avenue to Albany avenue.....	".....	".....	".....	1"	2"	".....	1,865	1 69	744	77	.....	.....	486	34	28 00	0.71	3,932 70	Sept. 11	Sept. 30	"
Howard avenue, Broadway to Madison street.....	".....	Obispo.....	".....	1"	2"	".....	9,343	1 93	4,578	171	.....	.....	2,493	34	24 00	0.88	23,024 76	" 1	Dec. 1	Interstate Paving Company.
Madison street, Howard avenue to 150 feet east.....	".....	Trinidad.....	".....	1"	2"	".....	5,262	1 92	3,036	140	.....	.....	1,586	30	104 00	0.77	13,454 45	July 7	Aug. 9	Cranford Company.

TABLE NO. 4—(Continued).

	FUND PAID FROM.	CHARACTER.	FOUNDATION.	THICKNESS		PAVEMENT REFACED.	PAVEMENT, SQUARE YARDS.	PRICE PER SQUARE YARD, INCLUDING FOUNDATION.	CUBIC LINEAL FEET		EXCAVATION, CUBIC YARDS.	EMBANKMENT, CUBIC YARDS.	LENGTH.	WIDTH ROADWAY.	INSTRUCTION		TOTAL COST.	WHEN COMPLETED.	WHEN FINISHED.	CONTRACTOR.
				Blotter	Wearing Surface				New.	Old.					Amount.	Per Cent.				
Keap street, Broadway to Grand street.....	Repaving Bond Fund.....	Trinidad	5' concrete.....	1"	2"	Cobblestone.....	4,008	\$1.80	2,030	87	...	...	1,457	...	\$44.00	0.43	\$10,318.70	Aug. 1	Sept. 1	Cranford Company.
Keap street, Lewis avenue to Throop avenue.....	"	Obispo.....	"	1"	2"	"	5,875	1.93	2,420	654	...	...	1,571	34	140.00	0.97	14,167.50	" 1	Dec. 18	Interstate Paving Company.
Letten place, St. James place to Franklin avenue.....	"	Trinidad	"	1"	2"	"	8,050	1.63	1,856	1,230	...	...	1,141	31	8.00	0.48	10,741.1	Oct. 20	Nov. 1	Cranford Company.
Madison street, Bedford avenue to Nostrand avenue.....	"	"	"	1"	2"	"	6,605	1.55	2,831	683	...	...	1,772	31	50.00	1.1	13,300.40	Sept. 29	Oct. 29	"
Madison street, Throop avenue to Sumner avenue.....	"	Obispo.....	"	1"	2"	"	6,008	1.93	2,184	65	...	...	1,771	3	12.00	1.07	1,000.00	" 1	Nov. 1	Interstate Paving Company.
Maujer street, Leonard street to Bushwick avenue.....	"	"	"	1"	2"	"	4,717	1.93	2,182	185	...	...	1,341	31	38.00	0.76	11,700.4	Oct. 7	" 11	"
McDonough street, Rockaway avenue to Broadway.....	"	Trinidad	"	1"	2"	"	2,075	1.55	1,604	134	...	...	1,015	34	0.00	0.0	1,015.80	Nov. 3	Dec. 1	Cranford Company.
McDonough street, Henry street to Columbia Heights.....	"	"	"	1"	2"	"	6,490	1.66	2,738	67	...	...	1,744	34	70.00	0.55	10,211.00	Oct. 4	Oct. 10	"
Monroe street, Clason avenue to Franklin avenue.....	"	"	"	1"	2"	"	6,490	1.66	2,738	67	...	...	1,744	34	70.00	0.55	10,211.00	Oct. 4	Oct. 10	"
Monroe street, Bedford avenue to Nostrand avenue.....	"	"	"	1"	2"	"	6,490	1.66	2,738	67	...	...	1,744	34	70.00	0.55	10,211.00	Oct. 4	Oct. 10	"
Nutria alley, Adams street to Pearl street.....	"	Alcatraz.....	Cobblestone.....	1"	2"	"	1,517	1.99	32	...	...	...	200	12	4.93	0.80	511.1	Aug. 13	Aug. 10	Brooklyn Alcatraz Asphalt Company.
Pacific street, Albany avenue to Schenectady avenue.....	"	Trinidad	5" concrete.....	1"	2"	"	5,833	1.63	2,010	961	...	...	1,500	34	108.00	0.88	10,000.00	Oct. 11	Dec. 18	Cranford Company.
Pacific street, Columbia street to Court street.....	"	Trinidad and Venezuela.....	"	1"	2"	"	5,244	2.04	3,230	477	...	...	1,051	24	12.00	0.96	14,123.74	July 11	Aug. 10	Uvalde Asphalt Paving Company.
Pacific street, Court street to Bond street.....	"	Trinidad.....	"	1"	2"	"	6,506	1.48	3,878	370	...	...	2,137	24, 30	84.00	0.60	1,008.00	Nov. 11	Dec. 1	Cranford Company.
Patchen avenue, Macon street to Decatur street.....	"	Obispo.....	"	1"	2"	"	1,640	1.93	601	176	...	...	436	34	28.00	0.70	10,000.00	Aug. 18	Sept. 13	Interstate Paving Company.
Poplar street, Hicks street to Henry street.....	"	Trinidad and Venezuela.....	"	1"	2"	"	1,127	1.60	794	68	...	...	451	24	36.00	1.38	2,000.00	Oct. 31	Nov. 10	Uvalde Asphalt Paving Company.
Poplar street, Hicks street to Columbia Heights.....	Repaving. Appropriation 1902.....	Trinidad and Venezuela.....	"	1"	2"	"	1,435	1.65	774	167	...	...	543	34	48.00	1.46	3,278.80	" 1	" 13	"
Rox avenue, Broadway to Madison street.....	Repaving Bond Fund.....	Trinidad.....	"	1"	2"	"	6,172	1.84	4,246	595	...	...	2,603	34	152.00	0.96	1,000.00	" 1	" 10	Cranford Company.
Rush street, Kent avenue to Division avenue.....	"	Asphalt block.....	4" concrete.....	1"	2"	"	3,246	2.10	970	500	...	...	805	34	132.00	1.33	8,000.00	Aug. 25	Oct. 10	Brooklyn Alcatraz Asphalt Company.
Ryerson street, 80 feet, between Park avenue and Willoughby avenue.....	Private contract.....	Trinidad.....	5" concrete.....	1"	2"	"	275	...	...	...	...	...	80	30	...	...	...	...	...	Cranford Company.
Saratoga avenue, Bannockburn street to Chamcey street.....	Repaving Bond Fund.....	Obispo.....	"	1"	2"	"	2,648	1.93	834	364	...	...	607	34	50.00	0.80	6,347.70	Aug. 1	Sept. 1	Interstate Paving Company.
Bannockburn street, Saratoga avenue to 100 feet east.....	"	Alcatraz.....	Belgian block.....	1"	2"	Belgian block.....	631	1.90	351	79	...	...	206	42	16.00	1.00	1,508.95	Oct. 8	Nov. 1	Brooklyn Alcatraz Asphalt Company.
Chamcey street, Saratoga avenue to 160 feet east.....	"	Trinidad.....	5' concrete.....	1"	2"	Cobblestone.....	6,757	1.60	4,113	75	...	...	2,024	30	74.79	0.49	15,530.60	July 23	Aug. 10	Cranford Company.
Second avenue, Fifty-eighth street to Fifty-ninth street.....	"	"	"	1"	2"	"	11,404	1.57	7,633	8,7	...	...	4,489	30	132.00	0.41	35,710.00	Aug. 12	Sept. 1	"
Seydel street, Broadway to Bushwick avenue.....	"	Obispo.....	"	1"	2"	"	4,334	1.93	1,234	1,107	...	...	1,238	1, 34	92.00	0.87	10,000.00	" 1	Oct. 1	Interstate Paving Company.
State street, Hill's street to Henry street.....	"	Wooden block.....	"	1"	2"	"	1,102	700	813	4	...	...	437	24	58.00	5.54	4,500.00	Sept. 22	" 10	D. Norton.
Steuben street, 240 feet south of Willoughby avenue.....	Private contract.....	Trinidad.....	"	1"	2"	"	800	...	...	...	...	...	240	30	...	...	...	...	...	Cranford Company.
Third avenue, Atlantic avenue to Flatbush avenue.....	Repaving Bond Fund.....	Alcatraz.....	"	1"	2"	"	1,205	1.9	238	100	...	...	200	30	66.00	1.50	3,550.35	Nov. 1	Nov. 10	Brooklyn Alcatraz Asphalt Company.
Willoughby avenue, Grand avenue to Bedford avenue.....	"	Trinidad.....	"	1"	2"	"	8,303	1.60	3,018	303	...	...	2,235	24	112.00	0.64	17,457.25	Sept. 10	Oct. 12	Cranford Company.
Willoughby avenue, Washington Park to Clinton avenue.....	"	"	"	1"	2"	"	3,684	1.55	1,660	242	...	...	1,100	30	30.00	0.47	7,595.70	" 11	" 1	"
Wilson street, Bedford avenue to Lee avenue.....	"	Obispo.....	"	1"	2"	"	2,122	1.93	1,004	133	...	...	571	34	28.00	0.53	5,282.84	" 1	" 1	Interstate Paving Company.

* Sample pavement, concrete only.

† 124 yards laid on special order.

‡ Wooden block pavement included in other smooth pavement.

TABLE NO. 5.

Statement Showing Amount of Stone Pavement Laid on Completed Contracts during the Year Ending December 31, 1902.

FUND PAID FROM.	CHARACTER.	FOUNDATION.	FILLING IN JOINTS.	PAVEMENT REPLACED.	PAVEMENT, SQUARE YARDS.	PRICE PER SQUARE YARD, INCLUDING FOUNDATION.	CURB, LINEAR FEET.		EXCAVATION, CUBIC YARDS.	EMBANKMENT, CUBIC YARDS.	LENGTH, LINEAR FEET.	Width Roadway.	INSPECTION.		TOTAL COST.	WHEN COMMENCED.	WHEN FINISHED.	CONTRACTOR.
							New.	Old.					Amount.	Per Cent.				
Adam street, Sands street to East river.....	Repairing Bond Fund.....	Granite.....	6" concrete....	Pitch and gravel.....	Cobblestone...	966*	\$2 79	182	.....	.....	290*	30	\$607 32	3.42	\$17,740 32	Oct. 2, 1901	Apr. 10	A. E. Donovan.
Amity street, Columbia street to East river.....	".....	".....	".....	".....	".....	1,303	3 16	339	13	.....	349	34	104 00	2.24	4,629 63	July 5	July 31	Thomas F. Byrnes.
Cant street, Bryant street to Hamilton avenue.....	".....	".....	".....	".....	".....	8,199	3 14	2,851	654	.....	2,062	38	392 00	1.28	30,604 43	" 1	Sept. 11	Dennis Norton.
De la w. street, Van Brunt street to Hicks street.....	".....	".....	".....	".....	".....	5,520	3 16	3,553	0	.....	1,090	30	232 00	2.08	21,331 25	June 2	July 9	William Kelly.
Lafayette place, Degraw street to Harrison street.....											737	24	.....	.....	.....	.....	.....	Private contract.
Fifty-third street, First avenue to Second avenue.....	.....	.....	Sand.....	Sand.....	New.....	2,610	.....	.....	.....	.....	720	30	.....	.....	.....	.....	.....	.....
Forty-second street, First avenue to Second avenue.....	Repaving Bond Fund.....	Granite.....	6" concrete....	Portland cement grout...	Cobblestone...	4,770	2 83	1,406	1,466	.....	1,437	30	252 00	1.69	14,868 50	July 28	Oct. 7	Maurice J. Hickey.
Garden street, Flushing avenue to Bushwick avenue.....	".....	".....	".....	Pitch and gravel.....	".....	2,107	2 92	1,231	42	.....	633	30	200 00	2.55	7,753 23	Sept. 2	Nov. 12	Jas. T. Holmes & Co.
Grand avenue, Glenmore avenue to Belmont avenue.....	Street Improvement Fund....	".....	".....	".....	New.....	2,459†	3 15	158	.....	2,215	726†	30	387 00	2.63	14,723 09	Oct. 28, 1901	Apr. 16	Cunningham & Kearns.
Hick street, Jay street to Bridge street.....	Repaving Bond Fund.....	Medina block....	".....	".....	Cobblestone...	1,313	3 24	1,000	.....	.....	503	24	172 00	3.22	5,345 36	Aug. 13	Oct. 1	Thomas F. Byrnes.
Madison avenue, Grand street to Meeker avenue.....	".....	Granite.....	".....	".....	".....	8,554	3 05	4,065	152	.....	2,619	30	704 00	2.18	32,288 65	July 31	" 29	James Quinn.
McKean street, Bushwick avenue to Bogart street.....	Street Improvement Fund....	Trap block.....	Sand.....	Sand.....	New.....	5,387	1 43	3,187	24	6,623	1,036	30	320 00	2.19	14,605 05	Oct. 9, 1901	Dec. 10	Thomas F. Byrnes.
Meeker street, Hambar avenue to Flushing avenue.....	Repaving Bond Fund.....	Granite.....	".....	".....	Cobblestone...	4,257	1 93	2,527	38	.....	1,287	30	72 00	0.69	10,382 54	Sept. 8	Sept. 27	Joseph McMahon.
Morgan avenue, Johnson avenue to Flushing avenue.....	".....	".....	6" concrete....	Pitch and gravel.....	".....	3,135	3 12	2,254	435	.....	1,474	30	296 00	2.23	13,297 01	June 23	Aug. 25	Cunningham & Kearns.
Polk avenue, Liniker avenue to Linwood street.....	Street Improvement Fund....	".....	Sand.....	Sand.....	New.....	23,905	1 80	9,268	178	15,105	5,223	42	572 00	0.89	64,259 40	July 15	Nov. 12	James Kelley.
Prospect avenue, Fourth avenue to Seventh avenue.....	Repaving Bond Fund.....	".....	6" concrete....	Pitch and gravel.....	Cobblestone...	10,400	3 19	3,776	502	.....	2,248	42	824 00	2.17	38,051 74	Aug. 18	Dec. 27	John E. Quinn.
Richards street, Graham avenue to Leonard street.....	".....	".....	".....	Portland cement grout...	".....	3,507	3 10	1,280	431	.....	932	30	224 00	1.65	13,371 35	July 5	Aug. 21	Cunningham & Kearns.
Richards place, De Kalb avenue to Lafayette avenue.....	".....	".....	".....	Pitch and gravel.....	".....	2,425	3 13	1,568	110	.....	1,031	24	324 00	3.34	9,713 31	June 19	Sept. 6	A. E. Donovan.
Third avenue, Twenty-sixth street to Fifty-eighth street....	".....	".....	".....	".....	".....	9,897	2 97	5,349	170	.....	3,259	42	100 00	2.45	30,694 17	July 14	Dec. 27	James P. Graham.
"U" avenue, East Seventeenth street to East Nineteenth street.....	Repaving Appropriation, 1902	".....	Sand.....	Sand.....	Macadam.....	1,138	2 00	.....	.....	.....	346	44	32 00	1.38	2,320 00	Sept. 15	Sept. 23	Frank J. Gallagher.
Van Dyke street, Van Brunt street to Richards street.....	".....	".....	6" concrete....	Pitch and gravel.....	Cobblestone...	1,688	2 80	940	89	.....	514	30	92 00	1.58	5,810 30	Oct. 13	Nov. 22	Thomas F. Byrnes.

*4,200 yards—1,244 feet laid in 1901.

†580 yards—175 feet laid in 1901.

TABLE NO. 6.

Showing Streets Graded, Curbed, Guttered and Macadamized on Contracts Completed During Year Ending December 31, 1902.

	FUND PAID FROM.	CHARACTER.	BRICK GUTTER PAVEMENT		NEW CURB, LINEAR FEET.	EXCAVA- TION, CUBIC YARDS.	EMBANK- MENT, CUBIC YARDS.	LENGTH, LINEAR FEET.	WIDTH ROAD- WAY, LINEAR FEET.	INSECTON		TOTAL COST.	WHEN COMMENCED.	WHEN FINISHED	CONTRACTOR.
			Square Yards.	Price.						Amount.	Per Cent.				
Avenue P, Kings Highway 800 feet north.....	Private Contract....	Macadam .....	....	...	.....	.....	.....	800	..	.....	...	.....	.....	.....	Private contract.
Bay Ridge parkway, Fourth avenue to First avenue.....	" .....	" .....	....	...	.....	.....	.....	2,500	..	.....	...	.....	.....	.....	Park Department.
Buffalo avenue, St. Mark's avenue to Eastern Parkway.....	Street Improvement..	Regulating and grading..	....	...	3,123	1,231	.....	1,847	34	\$225.00	1.43	\$1,048.25	Oct. 10	Dec. 20	Walter Castle.
East Fourteenth street, Church avenue to Caton avenue.....	Private Contract....	Macadam.....	....	...	.....	.....	.....	650	..	.....	...	.....	.....	.....	Private contract.
East Sixteenth street, Avenue D to Ditmas avenue.....	" .....	" .....	....	...	.....	.....	.....	730	..	.....	...	.....	.....	.....	"
East Seventeenth street, Kings Highway 850 feet north.....	" .....	" .....	....	...	.....	.....	.....	850	..	.....	...	.....	.....	.....	"
East Eighteenth street, Kings Highway 700 feet north..	" .....	" .....	....	...	.....	.....	.....	700	..	.....	...	.....	.....	.....	"
East Nineteenth street, Kings Highway 600 feet north.....	" .....	" .....	....	...	.....	.....	.....	600	..	.....	...	.....	.....	.....	"
East Twenty-first street, Kings Highway 500 feet north.....	" .....	" .....	....	...	.....	.....	.....	500	..	.....	...	.....	.....	.....	"
East Twenty-second street, Kings Highway 350 feet north.....	" .....	" .....	....	...	.....	.....	.....	350	..	.....	...	.....	.....	.....	"
Fifty-fourth street, Seventh avenue to Fort Hamilton avenue.....	Street Improvement..	Regulating and grading..	1,515	...	4,691	2,748	15,707	2,479	43 1/2	200.00	1.71	11,701.11	Aug. 21	Oct. 28	Mangieri & Co.
Fifty-seventh street, Seventh avenue to Eighth avenue.....	" ..	" ..	419	\$1.49	1,491	8,155	.....	737	32	416.00	2.03	5,718.40	Oct. 20	Dec. 29	"
Kingston avenue, Douglass street to Eastern Parkway.....	" ..	" ..	337	1.45	1,011	1,525	.....	524	34	472.00	6.32	2,690.60	Oct. 13	Dec. 13	F. J. Gallagher.
Linden avenue, Canarsie road to Utica avenue.....	Private Contract....	Macadam.....	....	...	.....	.....	.....	3,570	..	.....	...	.....	.....	.....	Private contract.
Ocean avenue, Flatbush avenue to Fort Hamilton avenue.....	" .....	" .....	....	...	.....	.....	.....	3,000	..	.....	...	.....	.....	.....	Park Department.
Ocean avenue, Kings Highway to Concourse. ....	" .....	" .....	....	...	.....	.....	.....	12,000	..	.....	...	.....	.....	.....	"
Seventy-second street, Sixth avenue to Fort Hamilton avenue.....	Street Improvement..	Regulating and grading..	956	...	2,874	4,775	.....	1,579	32	76.00	1.65	4,910.24	Oct. 7	Dec. 27	Murphy Brothers.
St. Mark's avenue, Howard avenue to 275 feet west of Rockaway avenue....	" ..	" ..	1,255	1.25	3,848	*10,245	.....	1,932	34	394.00	2.14	14,212.25	Nov. 10, 1901	June 19	McDermot & Foxton

*11,000 cubic yards excavation in 1901

TABLE NO. 7.
Showing Streets upon which Work was in Progress December 31, 1902.

	KIND OF IMPROVEMENT.	TOTAL AMOUNT PAVE- MENT, SQUARE YARDS.	TOTAL AMOUNT LAID, SQUARE YARDS.	TOTAL LENGTH LINEAR FEET.	LENGTH COM- PLETED, LINEAR FEET.	GRAD- ING COM- PLETED, CUBIC YARDS.	CONTRACTOR.
Butler place, Plaza street to Sterling place.....	Regulating, grad- ing, curb and gutters.....	.....	.....	426	....	18,000	I. Harris.
Clarkson street, New York avenue to Troy avenue.....	Macadam.....	10,440	.....	2,865	....	....	J. F. Mailie.
Cleveland street, Arlington avenue to Atlantic avenue.....	Regulating, grad- ing and curb.....	.....	.....	983	....	....	Mangieri & Co.
Congress street, Court street to Columbia street.....	Asphalt.....	6,470	2,500	1,410	550	....	Cranford Company.
East Nineteenth street, Tennis court to Beverly road.....	".....	5,100	5,100	1,289	1,289	3,330	Uvalde Asphalt Paving Co.
Ellery street, Nostrand avenue to Marcy avenue.....	".....	3,364	700	895	190	....	"
Flatbush avenue, Mallone street to Clurch avenue.....	Granite between rails	4,438	3,000	4,438	3,600	....	D. Norton.
Flushing avenue, Navy street to Washington avenue.....	Granite.....	8,920	2,200	3,500	1,650	....	M. J. Meagher.
Glen street, Railroad avenue to Euclid avenue.....	Regulating, grad- ing, curb and sidewalk.....	.....	.....	1,050	....	....	T. F. Byrnes.
Glenmore avenue, Stone avenue to Rockaway avenue.....	Asphalt.....	2,877	2,877	862	862	....	Interstate Paving Company.
Hall street, Flushing avenue to Park avenue.....	".....	1,981	1,931	596	596	....	Uvalde Asphalt Paving Co.
Hoyt street, Union street to Atlantic avenue.....	Granite.....	5,425	4,200	2,565	2,000	....	James Quinn.
Hoyt street, Union street to Carroll street.....	Asphalt.....	1,330	.....	74	....	....	Cranford Company.
Hudson avenue, East river to Sands street.....	Granite.....	5,660	4,800	2,048	1,700	....	M. Hickey.
Lorimer street, Nassau avenue to Noble street, and Meserole street, Guernsey street to Manhattan avenue.....	Asphalt.....	7,721	7,721	2,473	2,473	....	Uvalde Asphalt Paving Co.
Mermaid avenue, West Fifteenth street to West Nine- teenth street.....	Macadam.....	3,370	.....	500	....	4,500	Murphy Bros.
Meserole street, Waterbury street to Morgan avenue, and Waterbury street, Meserole street to Staggs street.....	Granite.....	5,090	5,090	1,605	1,605	4,000	M. J. Meagher.

TABLE No. 7—(Continued).

	KIND OF IMPROVEMENT.	TOTAL AMOUNT PAVE- MENT, YARDS.	TOTAL AMOUNT LAID, SQUARE YARDS.	TOTAL LENGTH COM- PLETED, LINEAR FEET.	GRAD- ING COM- PLETED, CUBIC YARDS.	CONTRACTOR.
Middleton street, Wallabout street to Lee avenue, and } Harrison avenue to Throop avenue.....	Asphalt.....	4,350	4,350	1,160	....	Uvalde Asphalt Paving Co.
New York avenue, Park place to Eastern parkway.....	".....	4,591	.....	1,178	....	Cranford Company.
Osborne street, East New York avenue to Sutter avenue	".....	6,070	6,070	1,820	....	Interstate Paving Company.
Osborne street, Sutter avenue to Blake avenue.....	".....	1,950	1,950	580	....	"
Park place, Washington avenue to Vanderhilt avenue...	".....	5,920	.....	1,553	....	Cranford Company.
Patchen avenue, Hancock street to Macon street, and } Decatur street to Fulton street.....	".....	6,430	.....	1,120	....	"
Prospect Park, West, Fifteenth street to Nineteenth } street.....	".....	5,000	2,000	1,640	....	Uvalde Asphalt Paving Co.
Putnam avenue, Nostrand avenue to 653 feet east.....	".....	2,531	2,531	687	....	"
Seventh avenue, Forty-first street to Forty-third street..	".....	2,290	2,290	483	951	"
Seventy-first street, Third avenue to Shore road.....	Macadam.....	8,375	.....	2,355	....	J. P. Graham.
Skillman street, Lafayette avenue to DeKalb avenue....	Asphalt.....	1,370	.....	496	....	Uvalde Asphalt Paving Co.
South Third street, Wythe avenue to Kent avenue.....	Medina block.....	1,443	1,443	441	441	J. H. Holmes & Co.
Sterling place, Troy avenue to Schenectady avenue.....	Regulating, grade- } ing, curb and } gutters.....	.....	.....	730	....	D. Nerton.
Sutton street, Nasau avenue to Driggs avenue.....	Asphalt.....	2,948	2,948	884	....	Uvalde Asphalt Paving Co.
Third avenue, Sixtieth street to Shore road.....	".....	41,465	21,000	12,400	6,280	Interstate Paving Company.
Twenty-second street, Third avenue to Sixth avenue....	Asphalt block.....	7,170	2,000	2,150	700	Brooklyn Alcatraz Asphalt Co.
Twenty-fourth street, Third avenue to Fourth avenue...	Asphalt.....	2,440	.....	729	....	"
Varick avenue, Metropolitan avenue to Flushing avenue.	Granite.....	12,690	.....	3,236	....	John O'Grady.
Wolcott street, Conover street to Richards street.....	Asphalt.....	3,139	3,139	947	....	Green River Asphalt Company.
Woodruff avenue, Parade place to Flatbush avenue.....	".....	6,010	6,010	1,810	....	Cranford Company.

TABLE NO. 8.

Showing Streets upon which Contracts are in Force and Work not Begun, December 31, 1902.

	CHARACTER OF IMPROVEMENT.	TOTAL AMOUNT PAVE- MENT, SQ. YDS.	GRADING.		ESTIMATED COST.	CONTRACTOR.
			Excava- tion.	Embank- ment.		
Albany avenue, Lincoln road to Clarkson street	Macadam.....	9,960	750	1,610	\$14,800 20	James P. Graham.
Baltic street, Clinton street to Fifth avenue.....	Asphalt	17,200	.....	.....	36,860 00	Brooklyn Alcatraz Asphalt Co.
Bergen street, Bedford avenue to Kingston avenue....	"	6,260	.....	.....	17,469 45	Uvalde Asphalt Paving Co.
Boerum street, Leonard street to Manhattan avenue	"	1,390	.....	.....	3,590 00	Cranford Company.
Bradford street, Liberty avenue to Pitkin avenue	Trap block	2,750	1,490	.....	7,544 00	McDermott & Foxton.
Covert street, Broadway to Evergreen avenue.....	Asphalt	4,110	.....	.....	9,365 20	Cranford Company.
Dean street, Sackman street to Rockaway avenue.....	"	4,305	.....	.....	10,008 01	Interstate Paving Company.
Folsom place, Linwood street to Essex street.....	Regulating, grading, { curbing, gutter and { sidewalk .....	.....	1,070	.....	1,252 00	D. Norton.
Fortieth street, New Utrecht avenue to Fort Hamilton avenue.....	Regulating, grading, { curbing, gutter and { sidewalk .....	.....	.....	3,100	4,167 40	Mangieri & Co.
Guernsey street, Calyer street to Meserole avenue.....	Asphalt	1,030	.....	.....	2,641 75	Cranford Company.
Halscy street, 300 feet east of Nostrand avenue to Sum- ner avenue.....	"	6,400	.....	.....	18,995 00	"
Hamburg avenue, Cornelia street to Moffat street.....	Granite.....	5,900	5,550	470	19,312 50	J. H. Holmes & Co.
Hicks street, Orange street to Middagh street	Asphalt	1,120	.....	.....	2,696 40	Brooklyn Alcatraz Asphalt Co.
Hinsdale street, Atlantic avenue to Sutter avenue.....	Regulating, grading, { curbing and side- { walk .....	.....	4,860	460	6,823 70	McDermott & Foxton.
"	Asphalt	7,825	.....	.....	15,712 50	Cranford Company.
Jerome street, Jamaica avenue to Glenmore avenue.....	"	6,870	7,725	.....	20,378 50	"

TABLE No. 8—(Continued).

	CHARACTER OF IMPROVEMENT.	TOTAL AMOUNT PAVE- MENT, Sq. Yds.	GRADING.		ESTIMATED Cost.	CONTRACTOR.
			Excava- tion.	Embank- ment.		
Marcy avenue, Macon street to Fulton street	Asphalt	1,380	.....	.....	\$3,120 60	Interstate Paving Company.
Maujer street, Florence street to Morgan avenue	Asphalt block	4,960	.....	.....	13,809 00	Brooklyn Alcatraz Asphalt Co.
Morgan avenue, Driggs avenue to 105 feet north	Trap block	367	.....	.....	1,105 75	E. J. McKeever.
Nelson street, Smith street to Columbia street	Asphalt	6,470	.....	.....	14,710 90	Cranford Company.
Nostrand avenue, Flushing avenue to Willoughby avenue	"	4,425	.....	.....	11,392 50	Interstate Paving Company.
" " Macon street to Prospect place	"	4,470	.....	.....	12,539 60	Uvalde Asphalt Paving Co.
Ninety-ninth street, Third avenue to Fort Hamilton avenue	"	2,540	3,104	.....	8,328 00	Interstate Paving Company.
Olive street, Grand street to Powers street, Devoe street to Metropolitan avenue	"	1,360	.....	.....	3,340 00	Cranford Company.
Palmetto street, Evergreen avenue to Central avenue	"	2,640	.....	.....	6,502 50	"
Prospect place, Franklin avenue to Nostrand avenue	"	6,420	.....	.....	13,347 00	"
Rutland road, Kingston avenue to Albany avenue	Regulating, grading, curbing and gutter	.....	1,720	10,930	6,918 50	D. Norton.
Hawthorne street, Kingston avenue to Albany avenue ..		.....	.....	.....	.....	.....
Albany avenue, Rutland road to Hawthorne street	Regulating, grading, curbing and side- walk .....	.....	200	150	1,567 50	J. P. Graham.
Kingston avenue, Rutland road to Hawthorne street...		.....	.....	.....	.....	.....
Seventy-third street, Third avenue to Fourth avenue...	Regulating, grading, curbing and gutter	.....	8,000	1,460	5,409 50	"
Olive street, Grand street to Powers street, Devoe street to Metropolitan avenue .....		.....	.....	.....	.....	.....
Sixty-first street, Fourth avenue to Fifth avenue	Regulating and grad- ing .....	.....	38,880	.....	7,776 00	Charles J. Vofrie.

Sterling place, Albany avenue to Kingston avenue	Regulating, grading, } curbing, gutter and } sidewalk .....	.....	1,500	160	2,280 70	J. P. Graham.
Ten Eyck street, Bushwick avenue to Waterbury street...	Asphalt	2,240	.....	.....	5,228 30	Cranford Company.
Tenth avenue, Thirty-ninth street to New Utrecht avenue	Regulating, grading, } curbing, gutter and } sidewalk .....	.....	30	890	1,876 50	J. P. Graham.
Thames street, Morgan avenue to Knickerbocker avenue	Asphalt	2,100	.....	.....	5,905 50	Cranford Company.
Vandervoort place, Thames street to Flushing avenue...	Granite	6,040	.....	.....	2,840 20	James Quinn.
Third avenue, Atlantic avenue to Union street	Asphalt	2,380	.....	.....	5,139 60	Brooklyn Alcatraz Asphalt Co.
Twelfth street, Eighth avenue to Prospect Park, West ...	Regulating, grading } and curbing .....	.....	.....	4,940	4,751 80	Mangieri & Co.
Van Sicken avenue, Pitkin avenue to Dumont avenue...	Asphalt	1,080	.....	.....	3,551 00	Cranford Company.
Wilson street, Lee avenue to Division avenue						

SUMMARY.

	Miles.	Yards.	Cost.
Asphalt	6.67	99,575	\$243,631 11
Granite	0.96	11,040	45,152 70
Trap block	0.19	3,117	8,649 75
Macadam	0.41	9,960	14,800 20
Regulating and grading	2.38	.....	42,824 60

TABLE NO. 9.
Showing Work Done by Corporations during Year 1902.

BY GAS COMPANIES.

COMPANY.	1-IN.	1½-IN.	2-IN.	3-IN.	4-IN.	6-IN.	8-IN.	10-IN.	12-IN.	16-IN.	20-IN.	2½-IN.	30-IN.	TOTAL.
Brooklyn Union Gas Company—														
Total mileage of mains in system.....	....	0.73	1.60	63.41	320.91	212.79	61.37	26.28	54.42	20.32	18.15	4.52	0.69	784.59
Mileage laid in 1902.....	....	....	....	....	1.25	10.83	1.83	0.39	0.06	1.99	0.17	1.69	....	18.21
Mileage removed in 1902.....	....	....	....	5.65	0.59	0.23	....	....	....	....	....	....	....	6.47
Brooklyn Borough Gas Company—														
Total mileage of mains in system.....	....	....	0.63	0.31	12.19	8.95	7.58	....	0.54	....	....	....	..	30.20
Mileage laid in 1902.....	....	....	0.07	....	0.79	0.38	....	....	....	....	....	....	....	1.24
Flatbush Gas and Illuminating Company—														
Total mileage of mains in system.....	0.25	0.10	0.08	15.47	19.81	11.38	2.38	0.84	2.08	1.33	0.07	....	....	53.79
Mileage laid in 1902.....	....	0.08	....	....	1.07	0.77	....	....	....	....	....	....	....	1.92
Mileage removed in 1902.....	0.19	0.05	....	0.13	0.08	....	....	....	....	....	....	....	....	0.45
Kings County Gas and Illuminating Company—														
Total mileage of mains in system.....	....	0.03	....	2.51	65.38	45.09	5.47	....	5.87	1.23	1.76	....	....	127.34
Mileage laid in 1902.....	....	0.03	....	....	0.89	0.09	....	....	....	....	..	....	....	1.01
Total miles of mains in city...	0.25	0.10	0.84	81.70	418.20	278.21	76.8	27.12	62.91	22.88	19.98	4.52	0.69	995.92

BY RAILROADS.

COMPANY.	MILEAGE OF SINGLE TRACK IN SYSTEM.	MILEAGE OF NEW SINGLE TRACK LAID IN 1902.	MILEAGE OF SINGLE TRACK LAID IN 1902.	NUMBER OF NEW CONNECTIONS BETWEEN EXISTING LINES.	NUMBER OF NEW CONNECTING CURVES AND CROSSINGS RENEWED.
Brooklyn Rapid Transit Company.....	465.50*	0.10	4.11	2	35
Coney Island and Brooklyn Railroad Company.....	31.26	....	1.97	....	2
Van Brunt Street and Erie Basin Railroad Company.....	2.12	....	....	....	....
Total for the year.....	498.88	0.10	6.08	2	37

* Of this number of miles of track 67.75 miles are elevated system.

BY ELECTRIC COMPANIES.

COMPANY.	TOTAL NUMBER MILES SINGLE DUCT SUBWAY IN SYSTEM.	TOTAL NUMBER MILES SINGLE DUCT SUBWAY LAID IN 1902.	TOTAL NUMBER MILES IRON PIPE SUBWAY LAID IN 1902.
Edison Electric Illuminating Company.....	124.46	3.66	3.80
New York and New Jersey Telephone Company.....	96.00	12.40	....
Flatbush Gas and Illuminating Company.....	27.30	....	....
Brooklyn Rapid Transit Company.....	127.40	12.74	....
Total miles subway in city.....	363.16	28.80	3.80

TABLE NO. 9—(Continued).

SQUARE YARDS OF PAVEMENT LAID.

COMPANY.	ASPHALT.	BRICK.	MAC- ADAM.	GRANITE.	BE'GIAN.	COBBLE	TOTAL.
*Brooklyn Rapid Transit Company.....	120	....	....	28,222	3,100	314	31,756
†Coney Island and Brooklyn Railroad Company.....	....	....	....	15,887	....	427	16,314
Edison Electric Illuminating Company.....	543	65	....	3,224	...	826	4,658
New York and New Jersey Telephone Company....	3,315	2,400	....	4,873	72	1,575	12,237
Brooklyn Union Gas Company.....	22	78	....	11,484	742	22,094	34,420
Flatbush Gas and Illuminating Company...	45	....	121	....	....	....	166
Kings County Gas and Illuminating Company.....	....	....	7	....	34	....	41
Brooklyn Borough Gas Company.....	....	....	64	207	12	....	283
Total for year 1902.....	4,046	2,543	192	63,897	3,960	25,237	99,875

* This includes 1.49 miles of double track with 26,149 square yards granite pavement on concrete foundation replacing old cobblestone.

† This includes 0.90 miles of double track with 15,887 square yards granite pavement on concrete foundation replacing old cobblestone.

TABLE NO. 10.

Showing Cost of Maintaining Asphalt Pavements during 1902.

TIME OUT OF GUARANTEE.	SQUARE YARDS.	TOTAL COST.	COST PER SQUARE YARD.	COST PER SQUARE YARD, CAR TRACK STREETS EXCLUDED.	COST PER SQUARE YARD, CAR TRACK STREETS.
One year.....	142,525	\$3,236 86	2.27 cents	2.15 cents	9.56 cents
Two years.....	224,342	6,758 41	3.01 "	2.72 "	6.50 "
Three years.....	42,146	1,965 77	4.66 "	4.66 "	4.66 "
Four years.....	40,381	1,097 63	2.72 "	2.72 "	....
Five years.....	40,487	1,305 78	3.22 "	3.22 "	....
Six years.....	39,148	8,658 68	22.12 "	2.62 "	27.78 "
Seven years.....	3,656	187 52	5.13 "	3.16 "	13.38 "
Eight years.....	30,420	3,191 49	10.49 "	5.28 "	16.21 "
Nine years.....	88,662	10,409 65	11.74 "	10.26 "	34.54 "
Ten years.....	36,543	3,178 78	8.70 "	6.70 "	....
Twelve years.....	3,448	108 47	3.14 "	3.14 "	....
Thirteen years.....	4,838	257 68	5.3 "	5.3 "	....
Fifteen years.....	1,870	61 04	3.3 "	3.3 "	....
Total.....	698,566	\$40,417 77			

Average cost, car track streets excluded.....	4.18 cents.
Average cost, car track streets.....	17.8 "
Average cost, all streets.....	5.79 "
Average cost, all streets, previous method.....	15.93 "

TABLE NO. II.

Showing Improvements Authorized by the Board of Estimate and Apportionment during the Year 1902, Contracts for which have not yet Been Made December 31, 1902.

	CHARACTER OF IMPROVEMENT.	ESTIMATED COST.	LENGTH, LINEAL FEET.	AREA, SQUARE YARDS.
Albemarle road, Flatbush avenue to Brighton Beach Railroad.....	Regulate grade and curb.....	\$6,600 00	1 500	.....
Albemarle road, Flatbush avenue to Brighton Beach Railroad.....	Paving with asphalt.....	15,000 00	1 500	5,970
Ashford street, Jamaica avenue to Arlington avenue.....	Regulating, grading and paving with asphalt.....	10,500 00	842	2,875
Atkins avenue, Liberty avenue to Pitkin avenue.....	Regulating, grading and paving with asphalt.....	6,500 00	845	2,820
Avenue "K," Flatbush avenue to Albany avenue.....	Curb and gutter.....	2,000 00	950	.....
Barbey street, Jamaica avenue to Belmont avenue.....	Regulate, grade and curb.....	16,000 00	3,484	.....
Barbey street, Jamaica avenue to Belmont avenue.....	Asphalt.....	23,500 00	3,484	11,750
Christopher street, East New York avenue to Livonia avenue.....	Regulate, grade and curb.....	17,450 00	3,750	.....
Christopher street, East New York avenue to Livonia avenue.....	Asphalt.....	25,000 00	3,750	12,500
Cleveland street, Arlington avenue to Atlantic avenue.....	Asphalt.....	7,000 00	1,040	3,500
Cleveland street, Atlantic avenue to Pitkin avenue.....	Regulating, grading and paving with asphalt.....	16,200 00	1,594	4,250
Crown street, New York avenue to Nostrand avenue.....	Regulate and grade.....	1,500 00	736	.....
East Eighteenth street, Beverley road to Avenue C.....	Curb and gutter.....	1,785 00	750	.....
Essex street, Pitkin avenue to New Lots road.....	Regulate and grade.....	12,000 00	2,310	.....
Fiftieth street, Sixth avenue to Eighth avenue.....	Regulate, grade and curb.....	7,000 00	1,500	.....
Fifty-third street, Seventh avenue to Eighth avenue.....	Regulate, grade, curb and gutter.....	2 500 00	726	.....
First avenue, Sixty-sixth street to Ninety-second street.....	Regulate, grade and curb.....	26,000 00	7,760	.....

Flatbush avenue, Line of Twenty-ninth and Thirty-second Wards to Avenue N.	Regulate, grade and curb.....	45,000 00	8,950	.....
Fulton street, Crescent street to Queens County Line (Enfield street).....	Regulating, grading and paving with granite.....	19,400 00	1,650	6,290
Harman street, St. Nicholas avenue to Wyckoff avenue.....	Regulating, grading and paving with asphalt.....	6,500 00	542	1,870
Hendrix street, Pitkin avenue to Dumont avenue.....	Regulate, grade and curb.....	8,500 00	2,080	.....
Hill street, Railroad avenue to Euclid avenue.....	Regulate, grade and curb.....	6,400 00	1,015	.....
Logan street, Jamaica avenue to Atlantic avenue.....	Regulate, grade and curb.....	11,000 00	2,390	.....
Milford street, Pitkin avenue to New Lots road.....	Regulate and grade.....	6,600 00	2,820	.....
Montauk street, Pitkin avenue to New Lots road.....	Regulate and grade.....	7,400 00	2,010	.....
New York avenue, Avenue C to Newkirk avenue.....	Regulate, grade and curb.....	5,700 00	1,130	.....
Nostrand avenue, Malbone street to Flatbush avenue.....	Regulating, grading and paving with granite.....	123,300 00	11,240	37,500
Park place, Classon avenue to Franklin avenue.....	Regulating, grading and paving with asphalt.....	11,500 00	920	3,480
Pitkin avenue, Linwood street to Queens County line.....	Regulate, grade and curb.....	26,700 00	5,742	.....
Pitkin avenue, Stone street to Powell street.....	Regulating, grading and paving with asphalt.....	9,400 00	695	3,310
Prospect avenue, Fort Hamilton avenue to Eleventh avenue.....	Regulating, grading and paving with asphalt and granite.....	39,600 00	2,200	{ 7,500 asp. 4,740 gr.
Reeve place, Coney Island avenue to Prospect avenue.....	Regulate, grade and curb.....	4,000 00	880	.....
Reeve place, Coney Island avenue to Prospect avenue.....	Asphalt.....	8,300 00	880	3,270
Rogers avenue, Malbone street to Flatbush avenue.....	Regulating, grading and paving with granite.....	109,700 00	10,000	34,800
St. Nicholas avenue, Ralph street to Queens County line.....	Regulating, grading and paving with asphalt.....	1,100 00	98	370
Seventh street, Second avenue to Third avenue.....	Regulating, grading and paving with asphalt.....	7,780 00	724	5,110
Vanderveer street, Bushwick avenue to Evergreen Cemetery.....	Regulate, grade and curb.....	2,300 00	408	.....
Vanderveer street, Bushwick avenue to Evergreen Cemetery.....	Asphalt.....	3,100 00	408	1,360
Totals.....	.....	\$652,015 00	91,04	149,975

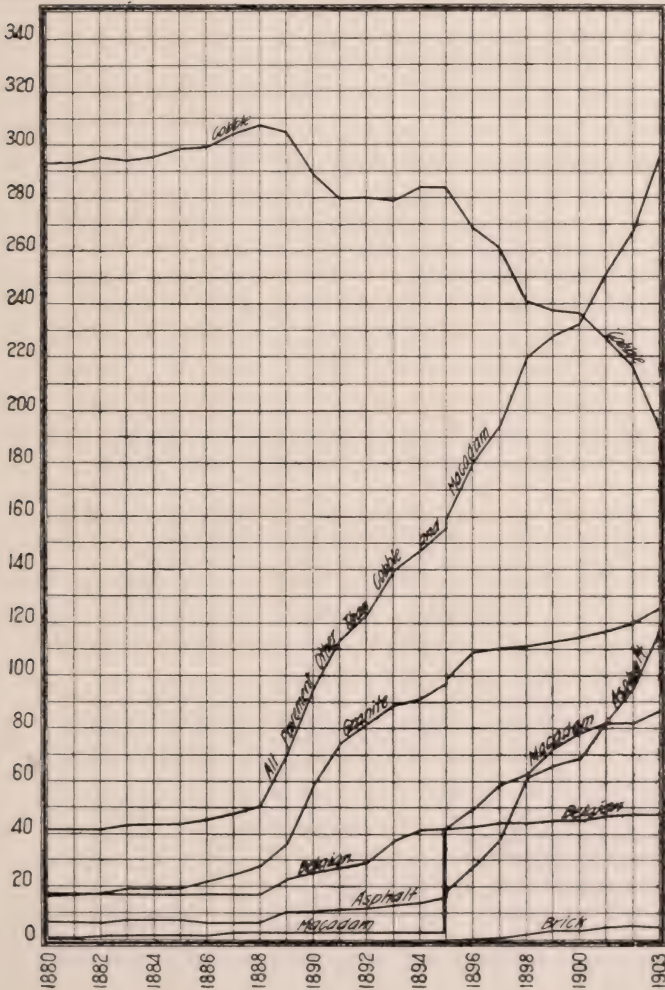
TABLE NO. 11—(Continued).

SUMMARY.			
	MILES.	SQUARE YARDS.	COST.
Asphalt	3.54	67,245	\$165,980 00
Granite.....	4.50	82,730	275,300 00
Regulating, grading, etc.....	9.63	.....	220,735 00
Totals	17.67	149,975	662,015 00

No. 12

Diagram Showing Mileage of Pavements
From Jan. 1st 1880 to Jan. 1st 1903.

Miles



BOROUGH OF BROOKLYN, CITY OF NEW YORK, }
 OFFICE OF THE SUPERINTENDENT OF SEWERS, }
 ROOM 42, MUNICIPAL DEPARTMENT BUILDING, }
 JANUARY 16, 1903. }

Hon. WILLIAM C. REDFIELD,
Commissioner of Public Works:

DEAR SIR—I have the honor to submit the following report of the transactions of the Bureau of Sewers in the Department of Public Works of the Borough of Brooklyn, City of New York, from the 1st day of January, 1902, to and including the 31st day of December, 1902, said report being the first Annual Report of this Bureau, as now constituted, in pursuance of the Greater New York Charter, as a part of the office of the President of the Borough of Brooklyn.

I first set forth a tabular statement showing the financial transactions of the Bureau during the year 1902:

FINANCIAL TRANSACTIONS.

There has been expended during the year 1902 the amounts as stated below against the various appropriations and bonded accounts:

	AVAILABLE.	EXPENDED DURING YEAR.		BALANCE DECEMBER 31, 1902.	OUT- STANDING LIABIL- ITIES.
		Salaries.	Supplies.		
<i>Appropriations, 1901.</i>					
Sewers, Repairing and Clean- ing—Pay-rolls and Supplies. }	\$312 19	\$190 25	\$108 60	\$13 34	Closed
Thirty-first Ward, Sewer Dis- tricts No. 1 and No. 3. }	709 01	33 75	649 65	25 61	"
Contingencies.	27 33	.....	26 80	53	"
Twenty-sixth Ward Disposal Works.	299 59	205 00	39 65	54 94	"
Salaries and Expenses, Sewerage System.	120 14	23 50	.....	96 64	\$90 00
	\$1,468 26	\$452 50	\$824 70	\$191 05	\$90 00

	AVAILABLE.	EXPENDED DURING YEAR.		BALANCE DECEMBER 31, 1902.	OUT- STANDING LIABIL- ITIES.
		Salaries.	Supples.		
<i>Appropriations, 1902.</i>					
Salaries.....	\$82,762 75	\$80,609 82	.....	\$2,152 93	.....
Sewers, Repairing and Clean- ing—Pay-rolls and Supplies. }	65,168 25	48,717 07	\$11,007 27	5,447 91	\$3,296 13
Contracts at Public Letting.....	20,000 00	1,648 20	15,979 10	2,372 70	1,424 56
Thirty-first Ward, Sewer Dis- tricts No. 1 and No. 3..... }	52,091 00	31,292 31	15,846 68	4,952 21	5,718 46
Twenty-sixth Ward Disposal Works..... }	35,437 25	22,641 03	8,967 59	3,828 63	4,989 93
Thirtieth Ward, Bath Beach District..... }	4,303 75	3,589 82	211 50	502 43	283 50
Dredging Sewer Outlets.....	12,000 00	328 75	5,051 00	6,620 25	.....
Supplies and Contingencies.....	2,000 00	.....	1,815 42	184 58	87 00
	\$273,763 00	\$188,827 00	\$58,878 56	\$26,057 64	\$15,859 58

	EXPENDED DURING YEAR.	
	Salaries.	Supplies.
<i>Bonded Accounts.</i>		
Wallabout Market Improvement Fund.....	.....	\$255 00
Atlantic Avenue Improvement Fund.....	\$205 50	2,651 60
Street Improvement Fund.....	41,970 90	625,598 17
	\$42,176 40	\$628,504 77
<i>Private Sewers.</i>		
Construction of Private Sewers, Borough of Brooklyn.....	\$465 31	\$482 61

The following moneys were received by the Bureau during the year :

Subway manholes.....	\$50 00
Permits	21,698 88
Third avenue sewer.....	2,433 37
Knickerbocker avenue sewer.....	2,337 54
Construction of private sewers, Borough of Brooklyn.....	391 50
Total paid to City Chamberlain.....	\$26,911 29

The total expenditures for the Bureau of Sewers, in the Borough of Brooklyn, for the year 1902, is here summarized:

For salaries, contingencies, sewers, repairing and cleaning; Twenty-sixth Ward Disposal Works, Thirty-first Ward Sewerage Districts No. 1 and No. 3, Thirtieth Ward, Bath Beach District, dredging, etc., against all appropriation accounts for 1902.....	\$247,705 56
Bonded accounts, as Street Improvement Fund, Atlantic Avenue Improvement Fund, Wallabout Market Improvement Fund.	670,681 17
For outstanding contracts on 1901 appropriations, as Contingencies, Sewers, Repairing and Cleaning; Pay-rolls and Supplies, Thirty-first Ward Sewerage Districts Nos. 1 and 3 and Salaries and Expenses, Sewerage System.....	1,277 20
For salaries, construction of private sewers and refund to owners of same.....	947 92

Requisitions were drawn on the Comptroller by the Bureau of Sewers, as follows:

1902 APPROPRIATIONS.

		Outstanding Liabilities.
Salaries, Superintendent's office.....	\$80,609 82	
Contingencies	1,815 42	\$87 00
<i>Sewers, Repairing and Cleaning; Pay-rolls and Supplies.</i>		
Salaries—Foremen, laborers, etc.....	\$48,717 07	
Materials, supplies, etc.....	11,007 27	
	59,724 34	3,296 13
<i>Twenty-sixth Ward Disposal Works.</i>		
Salaries—Engineers, firemen, laborers, etc.	\$22,641 03	
Coal and lime contracts.....	4,477 57	
Chemicals, supplies, repairs, etc.....	4,490 02	
	31,608 62	4,989 93
<i>Thirty-first Ward Sewerage Districts Nos. 1 and 3.</i>		
Salaries—Engineers, firemen, laborers, etc.	\$31,292 31	
Coal and lime contracts.....	3,239 73	
Chemicals, supplies, repairs, etc.....	12,606 95	
	47,138 99	5,718 46

Thirtieth Ward, Bath Beach District.

			Outstanding Liabilities.
Salaries	\$3,589 82		
Rubber goods, etc.....	211 50		
		\$3,801 32	\$283 50

*Sewers, Repairing and Cleaning; Contracts at
Public Letting.*

Salaries—Inspectors and engineers, etc.	\$1,648 20		
Contracts, supplies, etc.....	15,979 10		
		17,627 30	1,484 56

Dredging Sewer Outlets.

Salaries—Inspectors and engineers....	\$328 75		
Work done on contract.....	5,051 00		
		5,379 75	
		\$247,705 56	\$15,859 58

1901 APPROPRIATIONS.

*Sewers, Repairing and Cleaning; Pay-rolls and
Supplies.*

			Outstanding Liabilities.
Salaries—Foremen, laborers, etc.....	\$190 25		
Material and supplies.....	108 60		
		\$298 85	closed

*Thirty-first Ward Sewerage Districts Nos.
1 and 3.*

Salaries—Firemen, engineers, laborers, etc.	\$33 75		
Chemicals, repairs, etc.....	649 65		
		683 40	closed
Contingencies		26 80	closed

Twenty-Sixth Ward Disposal Works.

Salaries—Firemen, laborers, etc.....	\$205 00		
Supplies, chemicals, etc.....	39 65		
		244 65	closed
Salaries and expenses, sewerage system.....		23 50	\$90 00
		\$1,277 20	\$90 00

BONDED ACCOUNTS.

		Outstanding Liabilities.
<i>Street Improvement Fund.</i>		
Salaries—Engineers and inspectors.....	\$41,970 90	
Paid contractors, and incidental supplies.....	625,598 17	
		\$667,569 07

<i>Atlantic Avenue Improvement Fund.</i>		
Salaries—Engineers and inspectors.....	\$205 50	
Paid contractors, and incidental supplies.....	2,651 60	
		2,857 10

<i>Wallabout Market Improvement Fund.</i>		
Paid contractors, and incidental supplies.....	255 00	
		\$670,681 17

<i>Private Sewers.</i>		
Construction of private sewers, Borough of Brooklyn—		
Salaries—Engineers and inspectors.....		\$465 31
Refund to owners of sewers.....		482 61
		\$947 92

RECAPITULATION.		
		Outstanding Liabilities.
Total 1901 appropriations.....	\$1,277 20	\$90 00
Total 1902 appropriations.....	247,705 56	15,859 58
Total bonded accounts.....	670 681 17	2,067,631 18
Total private sewers.....	947 92	26 51
	\$920,611 85	\$2,083,607 27

Referring to the outstanding liabilities shown in above tabular statements entitled, "Requisitions drawn on the Comptroller," I beg to advise that in the 1901 statement, the sum of \$90 is for a bill of horse keep which has not been submitted for audit from this Bureau; said liability being the only item outstanding against the appropriation accounts for the year 1901.

In the 1902 appropriations, the liabilities outstanding represent :

1st. Under " Sewers Repairing and Cleaning, Pay-rolls and Supplies," sundry supplies for which bills have not been rendered to the Bureau for audit.

2d. Under " Twenty-sixth Ward Disposal Works," sundry supplies, and for payments due on coal and lime contracts.

3d. Under " Thirty-first Ward Sewerage Districts Nos. 1 and 3," sundry supplies, coal and lime contracts, forage, for one 65 H. P. boiler, for rubber goods and for two centrifugal pumps contracted for and being erected in Stations Nos. 2 and 3 of the Coney Island Sewage Disposal Works.

4th. Under " Thirtieth Ward Bath Beach District," they represent sundry supplies.

5th. Under " Sewers Repairing and Cleaning Contracts at Public Letting," the outstanding liabilities are for a 48-inch wooden outlet barrel sewer at the foot of Sackett street; a 36-inch cast-iron storm sewer at Coney Island, Caisson No. 2, and for repairs to Hegeman avenue sewer, contracted for and completed during the year; said liabilities representing a retained percentage for guarantee period extending into the year 1903.

The outstanding liability against " Bonded Accounts " represents an amount held pursuant to the specifications of completed contracts which are within the retained percentage period, or the period of guarantee for repairs and for the restoration of roadways over sewer trenches, extending six months subsequent to the completion of contracts in all work to be performed, and an estimated amount which will be due contractors when all contracts in progress are completed.

I now draw your especial attention to the magnitude of work in the matter of contracts for new sewers and improvements, which have been supervised by the engineering corps of my Bureau during the past year.

The value of work in status ranging from preparing plans and specifications to actual completion in construction and

consummation has been found to be \$4,034,819, which exceeds by over \$1,800,000 the total amount of any of the years 1898, 1899, 1900 or 1901, under supervision by this Bureau.

The value of contracts authorized by the Board of Estimate and Apportionment for new sewer work amounts to \$2,170,848.

This exceeds the total authorized for the three years of 1898, 1899 and 1901 by more than \$1,000,000, and also exceeds that large total authorized in 1900 by over \$670,000.

I briefly summarize the larger contracts authorized as follows:

	Engineer's Est. Cost.
Avenue G, from Coney Island avenue to Flatbush avenue, etc. (the so-called Paerdegat inlet sewer).....	\$266,700 00
Bedford avenue, from Flatbush avenue to Montgomery street.	150,000 00
Ninety-second street tunnel sewer, from New York Bay to Eleventh avenue.....	655,000 00
Sixtieth street, from Fourteenth avenue to Nineteenth avenue to Fifty-seventh street (first section of so-called Foster avenue sewer).....	298,300 00
Nineteenth avenue, from Fifty-seventh street to West street to Bergen lane to Foster avenue to East Ninth street (second section of so-called Foster avenue sewer).....	296,500 00
Foster avenue, from East Ninth street to Flatbush avenue, etc. (third section of so-called Foster avenue sewer).....	285,000 00
Scattered sewers throughout the borough.....	219,348 00
Total amount authorized.....	<u>\$2,170,848 00</u>

There has been in force during the year one hundred and twenty-eight (128) contracts, of which number sixty-three (63) have been entered into during the year.

The expenditures during the year on these contracts have been as follows:

Payments to contractors, also engineering and inspection, and incidental supplies for all contracts charged to bonded accounts	\$670,681 17
Payments to contractors, also engineering and inspection, and incidental supplies for all contracts charged to appropriation accounts.....	34,401 56
Pay-rolls for engineers and inspectors, private sewers.....	465 31

Refunds to owners of same.....		\$482 61
Add expenditures on 1902 appropriations, viz....	\$247,705 56	
Add expenditures on 1901 appropriations, viz....	1,277 20	
	\$248,982 76	
Less second item above (appropriation contracts), which is included in the appropriation ex- penditure for 1902, viz.....	34,401 56	
		214,581 20
Total vouchers submitted to the Comptroller.....		\$920,611 85

The preceding tabular statements show payments made on appropriation contracts, which the report of the Chief Engineer of Sewers, Borough of Brooklyn, hereinafter contained, will show such payments in detail, as well as those which have been made on contracts under Bonded Accounts, whether in course of construction or upon their completion.

You will also find in the report of the Chief Engineer of Sewers, Borough of Brooklyn, other details and description of the work of construction, etc., which have been performed during the year.

I would call your attention to the report of my Superintendent of Maintenance, Mr. M. Kennedy, as I wish to make clear the condition of this department of the Bureau when I assumed control, January 1, 1902, so that a clear comparison can be made of the results obtained for the year 1902 with that of 1901.

Beginning with the stable and repair yard at North Portland avenue, I found it sparsely equipped with supplies and tools, but overstocked with men; so much so that I found six men detailed to care for four horses, one of which was of no value, which we got rid of as quickly as possible. The number of men on the pay-roll here was 45. We dispensed with the services of 20, and with the reduced force we have been able to accomplish, as you will see by the report, more than double the amount of work that was done in 1901. We have also enlarged the capacity of the stable and shed-room, and have thus been

able to care for four of the horses and wagons out of a total of eight that were kept in livery stables by the Bureau, and by doing away with the need of two more at the present time we have only two horses and wagons kept at livery.

At the four sewage purification works, operated by the Bureau, a worse condition existed, owing to the fact that the money appropriated for the expenses of these works had been used up in the early part of November, 1901, caused by the excessive number of men employed, so that practically very little work was done during the last two months of the year. This applied to the whole of the Maintenance Department of Bureau. At Caisson No. 4, Coney Island, I found the building in very bad repair and was obliged to put on a new roof at once, as the old one leaked like a sieve and was absolutely beyond further repair, and the main pump of this plant practically ruined through neglect on the part of the engineer who had charge. The makers asked the sum of \$900 to repair it, or \$1,200 for a new one, and we decided to put in a new type of pump and engine in place of the old one, with the result of double the service, with a saving in fuel of 33 per cent. We have also made use of a centrifugal pump we found in the works, and have arranged to pump out the sludge from the settling tanks in place of the method then in use of mixing sawdust with the sludge and having the men shovel it out by hand, which process took three men three days' time for every operation. We do it now with the pump mentioned in two hours' time. As far as the purification of the sewage at this plant was concerned, there had practically been none for over eighteen months prior to January 1, 1902, with the exception that there was an average of three-quarters of a barrel of lime per diem used. The plant for the making of the chlorine gas had been dismantled and out of commission for that length of time. All this has been remedied at a cost, up to date, without taking into account the extra number of laborers that worked there for this purpose, of about \$2,800, leaving the works in first-class order and in condition to perform the purpose of its con-

struction, namely, the purifying of sewage, which, for the greater part of the year 1902, we were able to do and are doing at present.

At Caissons Nos. 2 and 3 we found practically the same condition as at Caisson No. 4. We were obliged to put on new roofs and install one new boiler, besides being obliged to make radical repairs throughout. We also installed new pumping plants for the purpose of pumping the sewage sludge, as at No. 4. We also put in weighing scales so that we could know that we were getting the amount of coal we paid for. Altogether we had to expend over \$7,000 to put these two caissons in proper working order. All this has been accomplished without asking for an increase in the appropriation, excepting that we asked for and were granted a transfer of \$1,660 from another part of our works, namely: "Sewers Repairing and Cleaning, etc." account. This is offset by the fact that we have 300 tons of coal to start the year with, which I hope will help us over the present coal famine. I may say that, owing to this trouble, our coal at these three plants has cost us \$3,000 over and above the amount appropriated in the budget for coal, and, if it had not been for this, we would have had money to spare. The present force operating these three plants are as follows:

1902.	as against the former force of	1901.
1 Superintendent, 7 Engineers, 9 Firemen, 1 Foreman, 14 Laborers,		{ 1 Superintendent, 6 Engineers, 8 Firemen, 2 Foremen, 1 Assistant Foreman, 1 Carpenter, 1 Watchman, 43 Laborers.

—which means a saving in the cost of the labor bill of 44 per cent.

At the Twenty-sixth Ward Disposal Works, being comparatively a new plant, we found a better condition of affairs as pertaining to the building and machinery, excepting that they were also without scales, so that they could not know that they

were receiving the weight of coal bought; so we put in a new scale and also new floor to the coal storage shed and painted and repaired and cleaned up the building generally, but there was the same overplus of labor employed. The present force operating the plant is as follows:

1902.		1901.
1 Supt. Engineer, } 2 Engineers, } 4 Firemen, } 1 Machinist, } 13 Laborers, }	as against the former force of	{ 1 Superintendent, { 3 Engineers, { 6 Firemen, { 1 Foreman, { 1 Plumber, { 1 Machinist, { 30 Laborers.

—a saving in cost of labor of 48 per cent.

With the present force we shall also be able to make the works a station from which all things pertaining to the sewers in that section can be attended to, which will relieve the North Portland Avenue Repair Yard of that distant portion of the borough.

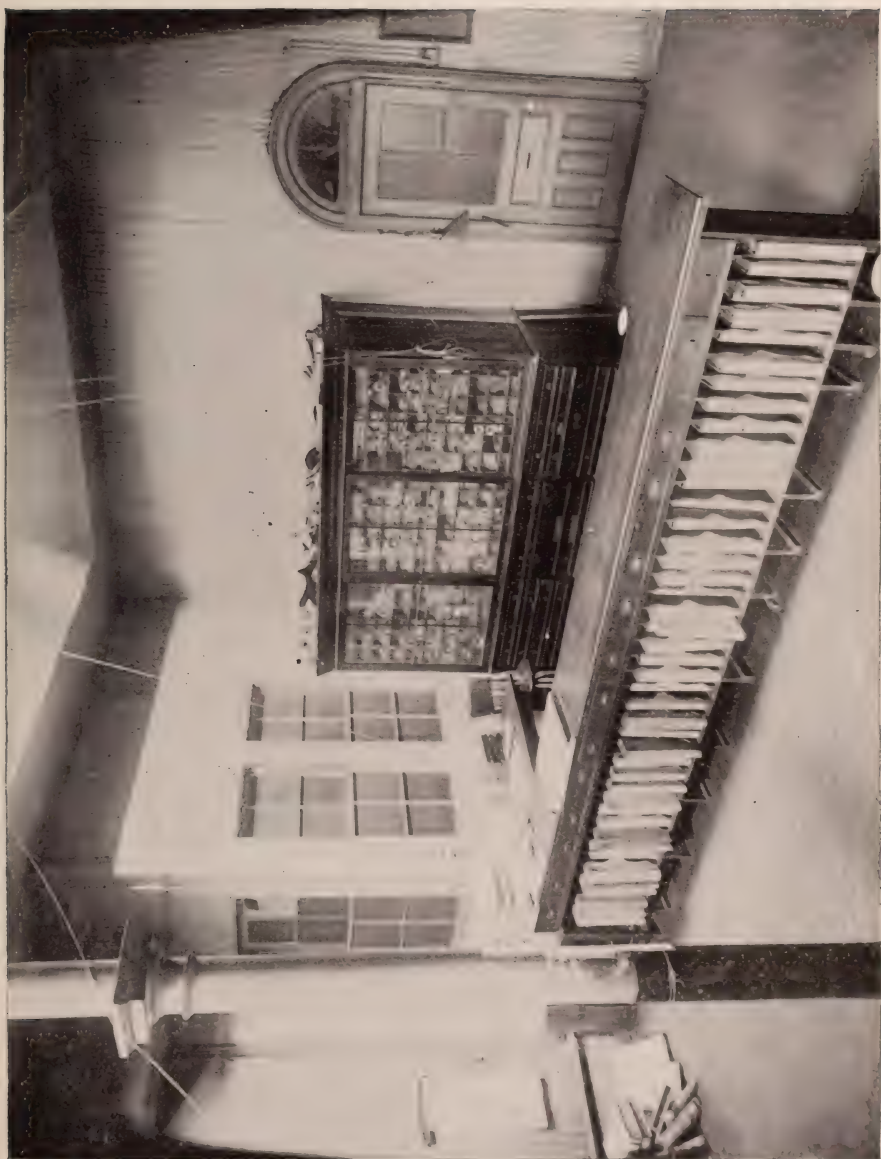
I may also add that we have managed to provide this works with a supply of coal that will carry us through the first three months of the year 1903.

In the matter of the sewer basin cleaning, the report speaks for itself. I may add that the result has been gained by simply using business push in place of political pull in the management of the work. The present force is as follows:

1902.		1901.
6 Foremen, } 18 Laborers, } 18 Horses and carts, }	as against the former force of	{ 6 Foremen, { 1 Assistant Foreman, { 28 Laborers, { 32 Horses and carts.

In the office force we were able to dispense with the services of the following as being absolutely unnecessary:

2 Cashiers,
 2 Clerks,
 1 Messenger,
 3 Inspectors,
 6 Laborers.



SOME MORE OF THE SEWER RECORDS OF BROOKLYN.

In consequence of the pruning and clearing of the deadwood in the Bureau I expect that a better showing will be made during the year 1903 in the matter of work accomplished, even though we have made the amount of our budget for 1903 \$38,600 less than it was for the year 1902.

Before concluding I would call your attention to the matter of the valuable records and maps belonging to this Bureau. In case of a fire, this Bureau, being a non-fireproof building, the probabilities are that they would all be destroyed, which would mean an almost irreparable loss to the City, and could scarcely be replaced or duplicated, and would, in a large measure, cripple the Bureau. Something should be done at once to provide a fireproof vault for their safe-keeping. The accompanying photos of the room will show the manner in which the records and maps are kept. The entire room, ceiling, floor and partitions are all of wood.

In conclusion, I would especially call your attention to the fact that with rare exceptions I have received the full support, royally given, by all the men in the Bureau, which fact has been a source of great pleasure to me. Especially has this been the case with Chief Engineer of the Bureau, Mr. H. R. Asserson, who at all times has placed himself at my disposal, ready to help in anything that was for the best interests of the City, regardless of time or his own convenience. I need only refer you to the report showing the immense amount of work, which is either in the course of preparation or under construction to-day in the Bureau, to show the amount of thought, care and skill that is requisite for the work, and I believe he is one of the number of employees of the City who is decidedly underpaid judging from the nature of his work.

I would also mention the obligations that I am under to the Superintendent of Maintenance, Mr. Kennedy, and his assistant, Mr. McGee. What has been accomplished in the betterment of this department of the Bureau has been due largely to their efforts, which have been constant and cheerfully given,

and it affords me pleasure to be able to give them credit for the many obligations I have been under to them throughout the year.

Yours respectfully,

JOHN THATCHER,
Superintendent of Sewers, Borough of Brooklyn.

BOROUGH OF BROOKLYN, CITY OF NEW YORK, }
 BUREAU OF SEWERS, }
 CHIEF ENGINEER'S OFFICE, }
 ROOM 44, MUNICIPAL DEPARTMENT BUILDING, }
 JANUARY 16, 1903. }

Mr. JOHN THATCHER,
Superintendent of Sewers:

DEAR SIR—I have the honor to submit a report of the transactions of this office for the year 1902.

The following lengths of sewers, with their appurtenances, have been constructed:

	Feet.	Miles.
Pipe Sewers, ranging in sizes from 12 inches in diameter to 24 inches in diameter.....	73,786.0 =	13.975
Brick Sewers, ranging in sizes from 30 inches in diameter to 180 inches in diameter.....	23,007.2 =	4.357
36-inch cast-iron sewer.....	188.0 =	0.035
	96,981.2 =	18.367

—a total increase in mileage of the sewerage system during the year:

	Miles.
Mileage of sewerage system on January 1, 1902.....	664.859
Mileage of sewerage system on January 1, 1903.....	683.226

In addition to the above, there has been constructed, in the construction and repairs of existing sewers, the following:

	Feet.	Miles.
48-inch wooden barrel sewer, 18 inch by 18 inch, wooden trunk	916 =	0.174
96-inch brick sewer.....	180 =	0.034
Total repairs.....	1,096 =	0.208

It will thus be seen that the total mileage of construction has been..... 18.575 miles.
 Although the net increase to the sewerage system has been..... 18.367 miles.

The receiving-basins built in the borough on January 1, 1902...	7,962
The receiving basins built during the year 1902.....	271

Total receiving-basins built in the borough on January 1, 1903.....	8,233
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During the year one hundred and twenty eight (128) contracts have been in force. Of this number, sixty-three (63) were entered into.

The following table will show the amount expended on contracts during the year 1902, divided as follows:

All contracts completed in full, the same having been under the guarantee period for repairs during the year.	
All work completed prior to January 1, 1901.....	\$27,312 74
Contracts completed in all work, but not completed in status of guarantee period.....	387,589 00
Contracts still in progress.....	289,925 99
Total	\$704,827 73
Salaries—Engineers and inspectors, private sewers.....	465 31
Refund to owners of private sewers.....	482 61
Catch-basins, Wallabout Market.....	255 00
Total expenditure on all contracts in 1902.....	\$706,030 65

There will be found in the sequel tabular statements showing the titles of these contracts, the streets in which the sewers were built, in detail, with items of cost, etc.

In order to clearly show the expenditures for new sewers which have increased the mileage of the sewerage system of the borough, I now submit a tabular financial statement, setting forth the expenditures on all appropriation contracts:

APPROPRIATION ACCOUNTS.	PAYMENTS.	ENGINEERING.	INSPECTION.
Coal for sewage disposal works.....	\$3,480 90	.....	.....
Lime for sewage disposal works.....	4,236 40	.....	.....
Repairing, etc., Hegeman avenue sewer.....	4,851 96	\$280 24	\$1,296 00
Forage.....	848 83	.....	.....
65 horse-power boiler, etc., Caisson No. 2...	.....	.....	.....
48-inch wooden barrel sewer foot of Sackett } street.....	5,732 82	248 35	383 00
Dredging Gowanus canal.....	5,051 00	106 25	222 50
30-inch cast-iron pipe, Caisson No. 2.....	2,758 24	37 50	176 50
Rubber goods.....	1,448 14	.....	.....
18-inch x 18-inch wooden trunk sewer, foot } Fifteenth avenue.....	2,636 08	63 35	193 50
Two (2) 6-inch centrifugal pumps, Caissons } Nos. 2 and 3.....	1,350 00	.....	.....
Total.....	\$32,394 37	\$735 69	\$1,271 50

SUMMARY.

Payments	\$32,394 37
Engineering	735 69
Inspection	1,271 50
	<u>\$34,401 56</u>

Thus we have expenditures against the appropriation con- tracts	\$34,401 56
Expenditures against bonded account contracts.....	670,681 17
Expenditures against private sewers.....	947 92
Total expenditures against all contracts.....	<u>\$706,030 65</u>

In the financial statement just above mentioned of the money expended on all contracts, it cannot be ascertained, nor can it be considered as representing the magnitude of the work performed by the engineering corps of your Bureau. This will be readily understood when I say that the value of the contract work alone supervised and calling for the careful attention and workmanship of said corps during the year amounts to

\$4,034,819. That is to say if all the work could have been completed in one year in all stages such would have been the cost of same.

Of course, many payments for part of the works completed prior to this year have been made, and yet many payments must be made and much work performed subsequent to the year 1902 before the works will be completed. This valuation, therefore, is set forth to show the magnitude of the work at hand, which extends from year to year in process of building, and to give some idea of the skill and energy which must be exercised by my coworkers in the engineering profession of your Bureau.

No one who has not been in close touch with the workings of this Bureau, and I must say for some considerable time, can conceive of the many details necessitated in the careful and economical administration of the affairs of this division of the Bureau. Of course, our work would be much less arduous in detail if three or four contracts embodied all of the work to be performed, but when it is considered that said contracts run into the hundreds, each one calling for much detail work, and necessarily so in the workings of a city as large as New York is and governed by the many safeguards which have been imposed by the stipulations of its Charter for contract work.

At the end of last year I found and set forth in my last annual report that the value of the work supervised for the twelve months prior thereto was \$2,204,731.38.

You will notice, therefore, that during the year 1902 this valuation has been increased in round numbers by \$1,830,000, or, as I have before stated, to an amount aggregating \$4,034,819.

The Board of Estimate and Apportionment have, during the year, authorized sewer improvements for which my estimate of their cost has been \$2,170,848.

I write at length in order that it may be understood that the work performed by my corps could have been done only through their high appreciation of an *esprit de corps*, and through the excellent organization maintained, and also from

the valuable experience they have obtained during their many years of service to the city.

They have performed their duties so quietly and so modestly that I am led to believe that in justice to them I should thus write, in order that no lack of appreciation may obtain from the citizens of the borough, whom they have so well served; especially is this so when it is, I believe, conceded that no municipal work calls for more engineering skill than that required in this Bureau.

The following summary subdivides the work supervised financially:

1st. For all contracts in status of repairs to sewers and roadways during guarantee period, a period extending six months subsequent to completion of work, to an amount.....	\$27,312 74
(See Table No. 2.)	
2d. For all contracts fulfilled and completed in all work, the actual cost of same being.....	883,973 02
(See Table No. 3.)	
3d. For all contracts in the course of construction, the estimated cost being.....	2,375,398 24
(See Table No. 4.)	
4th. For all contracts for which plans and specifications have been completed and which are in course of consummation, bids for same having been received, at an estimated amount of.....	66,960 00
5th. For all contracts for which plans and specifications are being drawn from field surveys made, the same having been authorized by the Board of Estimate and Apportionment, at an estimated amount of	681,175 00
Total value of work supervised.....	<u>\$4,034,819 00</u>

There is appended to this report a condensed set of tables which set forth details, viz., the names of the streets in which sewers have been built, the sizes of said sewers, the mileage of the system in the Borough of Brooklyn, the cost of all sewers built during the year, the number of house connections made during the year, and the total of said connections existing, etc., etc., to which your attention is respectfully drawn.

A map showing by different colorings the system as existing on January 1, 1902, the progress made during said year, also sewers which have been authorized in construction, etc., etc., is also included in this report.

A glance at same will show the wide area which has as yet not been entered into, although much of said area is thoroughly built up and densely populated.

The sandy soil of the borough has permitted the extensive building of efficient cesspools for drainage of houses, and if such were not the case I believe that many demonstrations and demands would be made to the City authorities to complete this sewerage system prior to the completion of the many classes of work now advocated.

In glancing at this map, at the great unsewered area, the thought again arises in my mind, which thought I have expressed in my annual report for five years past, of the desirability, and really of the necessity, of proper sewer improvements being built before all other municipal works; yet it is a strange fact that of said improvements (I believe I am right when I make this statement) the citizens of this borough know the least about and hear less of than any other work built for their comfort and convenience.

I will now briefly review the work of the year and recommend such constructions as I believe to be most urgently needed.

CONTRACTS COMPLETED.

Referring now to Table No. 3, which shows all contracts completed in all work, but accounts of same not closed in the books of the Bureau, I will mention the most important and interesting of those listed.

The appropriation contracts will be dealt with under the different headings descriptive of maintaining the existing sewerage system.

The first sewer of importance that will be found in Table

No. 3, or the table setting forth all contracts in which all work was completed during the year 1902, is that contract entitled:

“ Sewer in Huron street, between Provost street and East river;
Provost street, between Huron street and Greenpoint avenue;
Greenpoint avenue, between Provost street and Jewell street;
Jewell street, between Greenpoint avenue and Norman avenue;
Norman avenue, between Jewell street and 100 feet east of Humboldt street; and in
Meserole avenue, between Jewell street and Diamond street ”;

—the total cost of which has been \$142,195.70. Of course, from the immaterial lengths, as is shown completed during the year, it will be understood that the major portion of this contract was completed prior to the year 1902.

The completion of this sewer has fulfilled a long desired construction by the officials of the old City of Brooklyn and the present city for many years past. It has resulted in conducting sewage to the swift currents of the East river, which formerly was discharged into the marsh lands near Humboldt street and Norman avenue, some 3,500 feet inland; said sewage finding its way, indirectly, through a channel, which was maintained, to Newtown creek.

Before the completion of this sewer, much progress had been and was being made in filling in this marsh land, and now, some eight months after its completion, I believe the entire marsh land has been reclaimed to the benefit of the property holders.

It will also be understood that such filling in would tend to better health and convenience of the citizens in the Greenpoint section of this borough.

Second—That sewer entitled—

“ Fort Hamilton avenue, between Sixty-second street and Sixtieth street;

Sixtieth street, between Fort Hamilton avenue and Fourteenth avenue;
 Fourteenth avenue, between Sixtieth street and Forty-first street,"

—built at a cost of \$458,277.63, practically completed in the year 1901, it being the first section of the main trunk sewer for draining Map T, Drainage District 40, embracing a territory of a part of New Utrecht, of Blythebourne, of West Brooklyn, of Parkville and of Flatbush. Said sewer, excepting in Fourteenth avenue, was constructed in tunnel. This inland piece of sewer was authorized and constructed prior to its outlet, further westward, as the streets through which it was to be built were legally opened, while the streets through which the outlet was to pass had not been. They were opened a short time subsequent to the authorization of this sewer, the sewer to be built in them duly authorized and is now being pushed in prosecution, as will be explained under the heading in this writing, entitled "Sewers in progress."

I will refrain from further description, as such has been dealt with fully in prior annual reports.

Third—

"Eighth avenue, between Fifty-fourth street and Sixty-second street;
 Ninth avenue, between Fifty-fourth street and Sixty-second street;
 Fort Hamilton avenue, between Fifty-fourth street and Sixtieth street;
 Fifty-fourth street, between Seventh avenue and Fort Hamilton avenue";

—this contract was fully described in 1901 report, and it will be noticed that most of the work was performed in said year. The sewers are sub-mains, which will drain into the main trunk sewer for Map T, above described. The total cost of this contract was \$34,593.35.

Fourth—

"New Utrecht avenue, between Thirty-eighth street and Fifty-second street,"

—another sub-main to drain into the Map T trunk sewer was completed at a cost of \$33,588.16. It will be necessary to authorize and complete a length of sewer extending in this avenue from Fifty-second street to Sixtieth street, which has not, as yet, been authorized, owing to other streets contained in the proceeding not having been legally opened. This will be spoken of, however, later on in this report, under the heading of “Recommended Improvements.”

Fifth—Sewers in—

- “ Seventy-second street, between Sixth avenue and Fort Hamilton avenue;
- Seventy-third street, between Sixth avenue and Fort Hamilton avenue;
- Sixth avenue, between Sixty-fourth street and Seventy-first street;
- Seventh avenue, west side, between Seventy-second street and Seventy-third street;
- Eighth avenue, between Seventy-second street and Seventy-third street ”;

—the contract, upon which almost the entire work was completed during the year 1902, at a cost of \$19,984.87; said sewers also being main sewers, with a few lengths of lateral sewers, all being within the territory of Drainage Map T of this borough.

Sixth—Those two contracts built in the streets in the Fort Hamilton section of the city, as follows:

- “ Ninetieth street, between Third avenue and summit, 467 feet east of Third avenue;
- Ninety-fourth street, between Fifth avenue and Fort Hamilton avenue;
- Ninety-fifth street, between Fourth avenue and Fort Hamilton avenue;
- Ninety-seventh street, between Fourth avenue and Fort Hamilton avenue;
- Gelston avenue, between Ninety-second street and Ninety-fourth street;
- Third avenue, between Ninetieth street and Ninety-second street,”

—and that contract built in

"Ninety-third street, between Marine avenue and Fourth avenue;
 Ninety-fourth street, between Marine avenue and Fourth avenue;
 Ninety-fifth street, between Marine avenue and Fourth avenue;
 Ninety-seventh street, between Marine avenue and Fourth avenue;
 Marine avenue, between Ninety-second street and Fort Hamilton avenue.
 Second avenue, between Shore road and Ninety-fourth street;
 Third avenue, between Ninety-fourth street and Marine avenue";

—and that contract in which sewers were built in

"Ninety-ninth street, between Third avenue and Fort Hamilton avenue;
 Third avenue, between Ninety-ninth street and Shore road;
 Shore road, between Third avenue and Fourth avenue;
 Fourth avenue, between Shore road and One Hundred and First street;
 One Hundred and First street, between Fourth avenue and Fort Hamilton avenue;
 Fort Hamilton avenue, between One Hundred and First street and Ninety-second street";

—said contracts having been completed in all work during the year 1902 at the total costs of \$6,270.73, \$33,985.69, \$33,446.46, respectively, about half of the work contained in the first two mentioned being constructed during the year 1902, a greater portion of the last mentioned having been constructed in 1901. Said sewers are main and lateral sewers, which are dependent upon the completion of Ninety-second street tunnel sewer, which has been authorized and which has been ordered to be commenced in construction before they can drain the property for which they were designed and built, the said Ninety-second street tunnel sewer being the outlet for the same.

CONTRACTS IN PROGRESS.

I now draw your attention to table No. 4, which contains many minor constructions of interest and for the convenience of citizens throughout the borough; also other large sewers, of which I will speak briefly, the first of which is that sewer constructed in—

Wyckoff avenue, between Myrtle avenue and Flushing avenue;

Flushing avenue, between Irving avenue and Gardner avenue, and

Johnson avenue, between Gardner avenue and Knickerbocker avenue,

—which is estimated to cost, when completed. . . \$59,382 50

This sewer was begun in construction during the year 1901, about half of the work being completed in said year. The sewer is now practically finished, excepting minor details, such as the proper restoration of pavements, etc. This sewer will materially relieve the old flooded district of the Borough of Brooklyn, not as a relief sewer, however, but from the fact that it intercepts many sewers which were conducted to the main running through the flooded district, with temporary connections. It will assist in relieving, by conducting the sewage to a point in the main nearer its outlet, where said main is of such size as to care for this anticipated drainage.

Second—The sewers in the contract embracing the following streets in the Windsor Terrace section of the city, viz.:

Fifteenth street, between Prospect Park, West, and the old city line;

Sixteenth street, between Prospect Park, West, and the old city line;

Windsor place, between Prospect Park, West, and the old city line;

Prospect avenue, between Prospect Park, West, and Vanderbilt street;

Seventeenth street, between Prospect Park, West, and Terrace place;

Eighteenth street, between Prospect Park, West, and Terrace place;
 Nineteenth street, between Prospect Park, West, and Terrace place;
 Gravesend avenue, between Tenth avenue and Vanderbilt street;
 Eleventh avenue, between Eighteenth street and Fifteenth street;
 Terrace place, between Eighteenth street and Prospect avenue.

About one-third of the sewers in this contract were constructed in the year 1901, the remainder during the year covered by this report, the same having been practically completed, excepting minor details in the restoration of pavements, etc.

The estimated cost of this contract is..... \$38,695 25

The completion of these sewers has been a most important one for the upper portion of Windsor Terrace, which lies within the limits of the old City of Brooklyn. The lower portion of Windsor Terrace, between Vanderbilt street and Fort Hamilton avenue, was formerly sewered under the plans of the old Town of Flatbush, the lower portion of said terrace being a part of Flatbush. The upper portion of Windsor Terrace was thoroughly built up, and people were using the gutters for the discharge of water from their roofs and from their sinks, etc. This condition has been obviated by the construction of said sewers. The lower section of the terrace, however, has been put to considerable inconvenience, as the sewers which were constructed were connected with the small sewers of Flatbush, which were built for house drainage only, and not for storm waters.

We have therefore bulkheaded all of the basins in the upper portion of Windsor Terrace in order to prevent the flooding of houses as much as possible; the main sewers to care for storm waters as well as house drainage to enter this district, and to extend through Vanderbilt street, from Prospect avenue to East Fifth street, to Ditmas avenue, to the Ocean parkway, to Foster avenue, should therefore be authorized and constructed

as soon as possible, to give this section of the city efficient modern drainage to care for both storm waters and house drainage. I will speak of this later on in this report under "Recommended Sewer Construction."

Third—That sewer in—

Tenth avenue, between Seventy-seventh street and Sixty-second street;

Sixty-second street, between Tenth avenue and Sixth avenue;

Sixth avenue, between Sixty-second street and Sixty-fourth street;

Sixty-fourth street, between Sixth avenue and New York Bay;

—the last three streets of which are being built in tunnel construction, the first street mentioned being in open cut, said length having been about one-half constructed during the year 1901. This contract, the so-called Bay Ridge tunnel, the outlet trunk sewer for Map T of this borough, to drain a part of New Utrecht, Blythebourne, West Brooklyn, Borough Park, Parkville and Flatbush, has been the most important and the largest contract that has been in progress during the year 1902. It is a work of great magnitude, at an estimated cost of \$773,227.50.

It is being progressed as rapidly as work of this class can be done, work being carried on continually day and night, Sundays and holidays included, and is now being prosecuted from four different shafts, with two headings from three shafts, and with one heading from the fourth; in other words, work is being carried on from seven different points along its line at this time, while during the year, considering the open cut work near the outlet, at least at nine or ten different places.

This work, comparing with the largest of any engineering work being prosecuted in this country, is under the direct supervision of Mr. James W. Magrath, Assistant Engineer, assisted by Mr. F. C. Bates, Assistant Engineer, who are here both complimented, and to whom I extend my hearty appreciation

of their skill and care in the conduct of affairs under them. The work is being well done, and I also desire to extend my appreciation to all of Mr. Magrath's assistants, whom I would like to mention by name, but brevity estops me.

The sewer has been practically completed from the water front to a point near Sixth avenue. During this time headings have met from one shaft to another at two different places, and so accurately was the alignment and grade carried out by my assistants that in both cases an error in line of less than a half inch occurred when the headings met, the grades being perfect. I can appreciate the accuracy of this work, and the mental strain imposed upon my assistants during the time when the headings were known to be near each other, and until they were finally joined, as it has been known in tunnel work in other cities that errors in alignment ranging from 3 feet to 10 feet and more have occurred. I anticipate that this work will be completed at or near the end of the year 1903.

Fourth—That sewer in Bedford avenue, between Montgomery street and Flatbush avenue, authorized, contracted for and begun in construction during the year 1902, and now being prosecuted from three different points along its line, is the upper portion of the main of Map T, and will drain through the so-called Foster avenue sewer, which has been authorized, and which will be spoken of in the sequel, ultimately discharging into the tunnel sewer just before mentioned in this writing.

This work is being pushed in order that the improvements in paving the street with asphalt may be accomplished as soon as possible. Its estimated cost is \$116,865.75. Said sewer will be one of the mains that will convert the present separate system of sewers in Flatbush to a combined system, or a system to care for surface waters as well as house drainage only.

Fifth—That sewer in Sixtieth street, between Fourteenth avenue and Nineteenth avenue, and in Nineteenth avenue, between Sixtieth street and Fifty-seventh street, for which the contractor bid \$297,993 to complete, was authorized, con-

tracted for, and work has lately been begun in excavating the trenches for same. This sewer is the first section of the so-called Foster avenue sewer, connecting with the tunnel sewer practically completed in Sixtieth street, from Fourteenth avenue to Fort Hamilton avenue, in 1901, and described under the heading of this report, entitled "Contracts Completed," both sewers being a part of the main trunk sewer for drainage district map T of the borough, ultimately to discharge at the foot of Sixty-fourth street, into New York Bay.

Sixth—The sewers in Map V, District 42, under contract, entitled—

"Eighty-eighth street, between First avenue and Fifth avenue;

Eighty-ninth street, between Third avenue and Fourth avenue;

First avenue, between Eighty-sixth street and Ninety-second street;

Second avenue, between Eighty-sixth street and Eighty-eighth street;

Third avenue, between Eighty-eighth street and Eighty-ninth street;

Fourth avenue, both sides, between Eighty-sixth street and Ninety-second street, and

Fifth avenue, between Eighty-sixth street and Ninetieth street,

—at an estimated cost of \$24,999.85, have been practically completed, all that remains to be done being the restoration of pavements and the attention to minor details, the entire work being completed during the year, but authorized in the year 1901, said sewers being sub-mains and laterals for the convenience and comfort of residents in the New Utrecht section of the borough.

Seventh—The so-called Paerdegat avenue sewer, authorized, contracted for and now being progressed at three different points along its route, the contractor's bid for same being \$313,549.79, will extend in Avenue G, between Coney Island avenue and Flatbush avenue; in Flatbush avenue, west side,

between Avenue G, north intersection, and Avenue G, south intersection; in Avenue G, between Flatbush avenue and Nosstrand avenue; to Avenue F, to Paerdegat avenue, southerly side; to Flatlands avenue, there to discharge into the Paerdegat inlet; said sewer will drain the upper part of the old Town of Flatlands, and will fulfill the long desired want of drainage in a densely built up section of the city.

Eighth—The tunnel sewer to be constructed through the proposed street through the northern portion of Dyker Beach Park, between Eleventh and Seventh avenue, and in Ninety-second street, between Seventh avenue and New York Bay, authorized, contracted for and work begun during the year 1902, the contractor's bid for same being \$633,256.25, a contract in magnitude almost equaling the tunnel sewer above described under this heading. Excavating is now in progress, but as yet none of the sewer has been completed. This sewer, when built, will provide drainage for that section of the city near Fort Hamilton, and will permit of using the many lateral sewers which have been constructed in said section of the city. It will, when extended, care for the drainage of the Dyker Heights section, as well as that of Bay Ridge and Bensonhurst. Said extension should be authorized and will be spoken of under "Recommended Sewers" in this report.

Ninth—Sewer crossings under the Atlantic Avenue Improvement Subway, to provide for proper drainage when said subway is completed. In this respect two contracts have been entered into, one for \$35,715, the other for \$34,613. The crossings affected are shown on the last page of table No. 4 of this report. Another contract will be necessary in altering the sewers near the terminal of the Atlantic Avenue Improvement at their Flatbush depot, and plans for same will be prepared when the Board of Atlantic Avenue Improvement determine certain details, which are now being considered by them.

CONTRACTS IN STATUS OF CONSUMMATION, BIDS FOR SAME
HAVING BEEN RECEIVED.

Location.	Engineer's Estimate.
New York avenue, between Avenue C and Newkirk avenue; Newkirk avenue, between New York avenue and Nostrand avenue; Nostrand avenue, between Newkirk avenue and Avenue F.....	\$16,600 00
Nostrand avenue, between Avenue C and Newkirk avenue..	5,900 00
East Twenty-first street, between Regent place and Alber- marle road.....	1,200 00
Sewer-basin southwest corner Cortelyou road and East Eighteenth street.....	140 00
Ovington avenue, between Fourth avenue and Fifth avenue; Fifth avenue, between Ovington avenue and Bay Ridge avenue; Bay Ridge avenue, between Fifth avenue and Sixth avenue.....	7,820 00
Seventy-eighth street, between Second avenue and Fourth avenue	5,610 00
Fifty-third street, between Seventh avenue and Eighth avenue; Eighth avenue, between Fifty-third street and Fifty-fourth street.....	3,850 00
Eightieth street, between Third avenue and Fourth avenue.	2,640 00
Narrows avenue, between Seventy-first street and Shore road; Eighty-third street, between Narrows avenue and Shore road; Eighty-eighth street, between Narrows avenue and Shore road; Shore road, between Eighty- sixth street and and Eighty-eighth street.....	23,200 00
	\$66,960 00

CONTRACTS AUTHORIZED BY THE BOARD OF ESTIMATE AND
APPORTIONMENT.

The following contracts have been authorized by the Board of Estimate and Apportionment, for which surveys have been made and plans and specifications are now being drawn:

Location.	Engineer's Estimate.
Sewer-basins, Sutter avenue, all four corners Saratoga avenue	\$2,000 00
Sewer-basins, Sutter avenue, all four corners Douglass street	
Sewer-basins, Sutter avenue, northeast and northwest corners Ames street.....	
Sewer-basins, Sutter avenue, northeast and northwest corners Amboy street.....	
Sewer-basins, Sutter avenue, northeast and northwest corners Hopkinson avenue.....	
Sewer-basins, northwest corner Dorchester road and East Eighteenth street.....	140 00
Sewer-basins, southeast and southwest corners Clarkson street and Rogers avenue.....	350 00
Sewer-basin, northeast corner avenue K and Flatbush avenue	150 00
Sewer-basins, Albany avenue and Fenimore street, and Kingston avenue and Rutland road.....	800 00
Sewer-basins at the northerly and westerly corners Sixth avenue and Fourth street.....	300 00
Willoughby avenue, between Irving avenue and Wyckoff avenue	2,350 00
Windsor place, between Eighth avenue and Ninth avenue..	2,770 00
Nelson place, between Henry street and Columbia street..	2,600 00
Degraw street, between Classon avenue and Washington avenue	1,500 00
East Twelfth street, between Beverly road and Avenue C....	5,600 00
Avenue C, north side, between East Twelfth street and East Fourteenth street.....	
Bay Eighth street, between Bath avenue and Cropsey avenue	2,345 00
Seventy-seventh street, between Fourth avenue and Fifth avenue	2,400 00
Fiftieth street, between Sixth and Eighth avenue.....	29,765 00
Seventh avenue, between Fifty-second street and Sixty-second street.....	
Eighth avenue, between Fiftieth street and Fifty-third street	

Location.	Engineer's Estimate.
Ninetieth street, from Fourth avenue, westerly, to crown of. . }	
Ninetieth street, between Third avenue and Fourth avenue. . }	1,025 00
Third avenue, between Eighty-fifth street and Eighty-sixth street	1,200 00
Third avenue, between Bay Ridge avenue and Silliman place.	1,300 00
Sixty-first street, between Fourth avenue and Fifth avenue. . }	
Fourth avenue, east side, between Sixty-first street and Sixty-fourth street.	7,050 00
East Nineteenth street, between Albemarle road and Beverly road	5,000 00
Sewer-basins, northeast and southeast corners Fourth avenue and Twenty-ninth street.	330 00
Dahlgren place, between Ninety-second street and Fort Hill place	
Battery place, between Ninety-second street and One Hundred and Sixth street.	
Fort Hill place, between Dahlgren place and Battery place. . }	30,500 00
One Hundred and Sixth street, between Battery place and Seventh avenue.	
Seventh avenue, between One Hundred and Sixth street and Ninety-second street.	
Nineteenth avenue, from Fifty-seventh street to West street, crossing West street to Bergen lane.	
Bergen lane, from West street to Foster avenue.	296,500 00
Foster avenue, from Bergen lane to East Ninth street. . . . }	
Foster avenue, from East Ninth street to Flatbush avenue. . }	
Flatbush avenue, from Foster avenue to Bedford avenue. . }	
East Fifteenth street, from Caton avenue to Foster avenue. . }	285,200 00
Caton avenue, from East Fifteenth street to Parade place. . }	
Parade place, from Caton avenue to Ocean parkway.	
Ocean parkway, from Parade place to St. Paul's place. . . . }	
	\$681,175 00

The last two authorizations by the Board of Estimate and Apportionment are for sewers of great importance to those residing in Flatbush and in Parkville, said sewers being the two last sections of the so-called Foster avenue sewer, a part of the Map T main spoken of frequently in this report.

When completed they will join the Bedford avenue sewer, which is now under construction, with the Bay Ridge tunnel sewer, which is also under construction, thus completing the

trunk sewer for the Map T territory, which has been described heretofore in this report.

RECOMMENDED SEWER CONSTRUCTION.

I believe that the most important sewer which should be constructed in the Borough of Brooklyn is in—

Quay street, from East river to West street;
 West street, from Quay street to North Fifteenth street;
 North Fifteenth street, from West street to Engert
 avenue.
 Engert avenue, from North Fifteenth street to Hum-
 boldt street;
 Engert avenue, from Russell street to North Henry
 street;
 Wythe avenue, from Norman avenue to North Fif-
 teenth street.

Estimated cost \$75,000 00

Said sewer has long been known as the so-called Bushwick creek sewer; its construction has been recommended from this office time and again during the many years past; in fact, it was one of the first plans that your engineer was engaged upon as a draughtsman after his entering the City's service, some sixteen years ago. As the Local Board of the Williamsburg District has recently recommended the above construction, I sincerely hope that the Board of Estimate and Apportionment may speedily authorize its construction.

In my last annual report in regard to this sewer, I said that which will be hereafter quoted, which was then and is now pertinent.

“The swamp lands which formerly existed adjacent to old Bushwick creek have been gradually filled in, and sub-main sewers which formerly discharged there have been temporarily carried to the North Twelfth street main sewer, thereby surcharging it during heavy rainfalls. Sub-mains are now discharging near Norman avenue and Banker street, and at Franklin street and Kent avenue into small ditches, Bushwick creek having been practically destroyed, excepting these existing ditches, which must be used to convey sewage to the East river

until the Quay street, etc., main sewer is built. These ditches are liable to obstruction, thereby tending to cause damage to property-owners by the flooding of their cellars."

RELIEF SEWERS.

Second—

In my last annual report attention was called to the necessity of certain relief sewers to be constructed, and as the matter was fully set forth, I will refrain from going into detail in describing their locations again.

You are aware that the authorities of the City are progressing these important sewers, the Local Boards of the district affected having recommended the same, and I am informed that every endeavor is being made to finish certain details for easements to be procured for the use of land, when the sewers will be favorably considered by the Board of Estimate and Apportionment.

The estimated cost of same is \$303,000, which is set forth, for reasons to more fully appear, hereinafter in this report.

Third—

Seeley street, from Gravesend avenue to Eighteenth street;

Eighteenth street, between Seeley street and Vanderbilt street;

Vanderbilt street, between Eighteenth street and East Fifth street;

East Fifth street, between Vanderbilt street and Ditmas avenue;

Ditmas avenue, between East Fifth street and Ocean parkway, west side;

Ocean parkway, west side, between Ditmas avenue and Foster avenue;

Vanderbilt street, between Prospect avenue and Eighteenth street.

Estimated cost \$189,000 00

The above improvement was petitioned for and reported upon from this office under date of November 13, 1902.

The above lengths of sewers are necessary to give efficient drainage to the Windsor Terrace section of the city, and also to provide proper drainage for that territory bounded by the Ocean parkway, Gravesend avenue, Fort Hamilton avenue and Foster avenue.

I spoke of the necessity of this main under the heading of this report, entitled "Contracts in Progress."

This construction will also prevent the further ponding of water at the Ocean parkway entrance to Prospect Park.

Fourth—

Fourteenth avenue, between Thirty-ninth street and Forty-first street;

Thirty-ninth and Fortieth streets, between Fourteenth avenue and New Utrecht avenue;

Tenth avenue, between Thirty-ninth street and New Utrecht avenue;

New Utrecht avenue, between Fifty-second street and Sixtieth street.

Estimated cost \$73,100 00

The above improvement was petitioned for and reported upon from this office under date of March 3, 1902.

The above mains will provide for the drainage of a portion of Borough Park, which is well known to be a thoroughly built-up section of the borough. It will also complete the length of main needed in New Utrecht avenue, between Sixty-second street and Fiftieth street, hereinbefore mentioned.

*Fifth—*The following sewers should be constructed:

Seventh avenue, between Seventy-ninth street and Ninety-second street;

Tenth avenue, between Seventy-ninth street and Eighty-sixth street;

Eleventh avenue, between Seventy-ninth street and Eighty-sixth street;

Twelfth avenue, between Seventy-ninth street and Eighty-sixth street;

Thirteenth avenue, between Seventy-ninth street and Eighty-sixth street;

- Fourteenth avenue, between Eighty-third street and Eighty-sixth street;
- Seventy-ninth street, between Seventh avenue and Thirteenth avenue;
- Eighty-fifth street, between Seventh avenue and Fourteenth avenue;
- Eighty-second street, between Seventh avenue and Thirteenth avenue;
- Eighty-fourth street, between Seventh avenue and Fourteenth avenue;
- Eighty-third street, between Seventh avenue and Fourteenth avenue;
- Eighty-sixth street, between Seventh avenue and Fourteenth avenue;
- Parrott place, between Seventh avenue and Ninety-second street;
- Tenth avenue, between Eighty-sixth street and Seventh avenue;
- Gubner street, between Eighty-sixth street and Seventh avenue;
- DeRussey street, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Eleventh avenue, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Twelfth avenue, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Bay First street, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Bay Second street, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Fourteenth avenue, between Seventy-ninth street and Eighty-third street;
- Fourteenth avenue, between Eighty-sixth street and proposed street through northern portion of Dyker Beach Park;
- Seventy-ninth street, between Thirteenth avenue and Fourteenth avenue.

- Eightieth street, between Seventh avenue and Eleventh avenue;
- Eightieth street, between Thirteenth avenue and Fourteenth avenue;
- Eighty-first street, between Seventh avenue and Eleventh avenue;
- Eighty-first street, between Thirteenth avenue and Fourteenth avenue;
- Eighty-second street, between Thirteenth avenue and Fourteenth avenue;
- Proposed street through northern portion of Dyker Beach Park, between Fourteenth avenue and Eleventh avenue.

Estimated cost \$342,600 00

The above improvement was petitioned for and reported upon from this office under date of May 15, 1902.

- Bath avenue, between Bay Sixth street (Fourteenth avenue) and Bay Twenty-seventh street (Twenty-first avenue);
- Bay Sixth street (Fourteenth avenue), between Bath avenue and a proposed street through the northern portion of Dyker Beach Park; also in
- Bay Twenty-seventh street (Twenty-first avenue), between Benson avenue and Bath avenue.

Estimated cost \$224,800 00 .

The above improvement was petitioned for and reported upon from this office under date of December 11, 1902.

- Bath avenue, between Bay Twenty-seventh street (Twenty-first avenue) and Bay Thirty-third street (Twenty-third avenue);
- Bath avenue, between Bay Thirty-third street (Twenty-third avenue) and Bay Thirty-fifth street;
- Bay Thirty-fifth street, between Bath avenue and Benson avenue;
- Benson avenue, between Bay Thirty-fifth street and Stillwell avenue, crossing Stillwell avenue to Avenue V;
- Avenue V, between Stillwell avenue and West Thirteenth street;
- West Thirteenth street, between Avenue V and Gravesend basin.

In addition, force main in—

West Thirteenth street, between Gravesend basin and Avenue V;

Avenue V, between West Thirteenth street and Stillwell avenue, crossing Stillwell avenue to Benson avenue;

Benson avenue, between Stillwell avenue and Bay Twenty-seventh street (Twenty-first avenue);

besides Silt and Trap basin and pumping plant, to be situated on land procured near West Thirteenth street and the Gravesend basin.

Estimated cost \$194,800 00

The above improvement was petitioned for and reported upon from this office under date of December 11, 1902.

I need but mention that the first case above refers to the Dyker Heights section of the city, to call attention to the necessity of this work, the mains being an extension of the Ninety-second street tunnel sewer, now under construction. The other two lengths of sewers above mentioned are a further extension of the Ninety-second street tunnel sewer, to enter Bath Beach and Bensonhurst, to provide an efficient sewerage system to care for both storm water and house drainage, in lieu of the small system of sewers which now exists and which cares for house drainage only.

Sixth—

Malbone street, between New York avenue and Brooklyn avenue;

Malbone street, between New York avenue and Nostrand avenue;

Nostrand avenue, between Midwood street and Hawthorne street;

Hawthorne street, between Nostrand avenue and New York avenue;

New York avenue, between Hawthorne street and Martense street;

Martense street, between New York avenue and Bedford avenue.

Estimated cost \$91,960 00

The above improvement was petitioned for and reported upon from this office under date of September 10, 1902.

This main sewer is for that portion of Flatbush east of Bedford avenue, between Martense street and Eastern parkway. It will connect with the Bedford avenue main, now under construction, and place this portion of the borough in the status of a combined sewerage system instead of a separate sewerage system.

Seventh—The following main sewers are necessary in that rapidly building up portion of the borough known as Flatlands. They should certainly be constructed in the earliest possible time, that is, for sewer's in—

Brooklyn avenue, between Avenue H and Avenue J;
Avenue J, between Brooklyn avenue and East Fortieth
street;

East Fortieth street, between Avenue J and Flatlands
avenue;

Flatlands avenue, between East Fortieth street and
Paerdegat basin.

Estimated cost \$338,500 00

The above improvement was petitioned for and reported upon from this office under date of July 29, 1902.

Avenue J, between East Sixteenth street and East Sev-
enteenth street;

Avenue J, between Ocean avenue and East Sixteenth
street;

East Eighteenth street, between Avenue J and Ave-
nue I;

East Nineteenth street, between Avenue I and Ave-
nue J;

East Sixteenth street, between Avenue J and Ave-
nue K;

East Seventeenth street, between Avenue I and Ave-
nue J;

East Eighteenth street, between Avenue J and Ave-
nue K;

Avenue K, between East Sixteenth street and Nostrand
avenue;

Nostrand avenue, between Avenue K and Avenue M;

Avenue M, between Nostrand avenue and Flatlands avenue;

Flatlands avenue, between Avenue M and East Fortieth street;

Ocean avenue, between Avenue J and Avenue K;

East Nineteenth street, between Avenue J and Avenue K.

Estimated cost \$187,150 00

The above improvement was petitioned for and reported upon from this office under date of September 23, 1902.

Eighth—The following main sewers should also be constructed:

Pumping plant and building on land near Flatlands avenue and Paerdegat avenue, north side, and

Force main through Paerdegat avenue, northerly side, from Flatlands avenue to Ralph avenue;

Ralph avenue, from Paerdegat avenue, northerly side, to Avenue D;

Ralph avenue, from Avenue D to Avenue C;

Avenue C, from Ralph avenue to Avenue D;

Avenue D, from Avenue C to Powell street;

Powell street, from Avenue D to Vienna avenue;

Vienna avenue, from Powell street to Williams avenue;

Williams avenue, from Vienna avenue to Fresh creek basin;

Vienna avenue, from Williams avenue to Malta street;

Malta street, from Vienna avenue to Wortman avenue;

Wortman avenue, from Malta street to New Jersey avenue.

Estimated cost \$465,300 00

The above improvement was petitioned for and reported upon from this office under date of January 27, 1902.

Malbone street, between Brooklyn avenue and Albany avenue;

Miller place, between Malbone street and Lefferts avenue;

Aitkin place, between Malbone street and Lefferts avenue;

Lefferts avenue, northerly side, between Aitkin place and Brooklyn avenue;

Brooklyn avenue, between Lefferts avenue and Midwood street ;	
Midwood street, between Brooklyn avenue and Kingston avenue ;	
Kingston avenue, between Malbone street and Rutland road ;	
Rutland road, between Kingston avenue and Remsen avenue ;	
Malbone street, between Albany avenue and Lefferts avenue ;	
Lefferts avenue, northerly side, between Malbone street and Utica avenue ;	
Utica avenue, between Lefferts avenue and East New York avenue, crossing East New York avenue to Remsen street ;	
Remsen avenue, between East New York avenue and Ralph avenue ;	
Ralph avenue, between Remsen avenue and Avenue C.	
Estimated cost	\$338,450 00

The above improvement was petitioned for and reported upon from this office under date of September 10, 1902.

As above noted, the first of the above lengths of sewer was reported upon on January 27, 1902, being outlet sewers for the so-called Paerdegat avenue sewer, which is now under construction.

It will be noticed in the communication referred to that the temporary purification of sewage could be performed for about one year subsequent to the completion of the Paerdegat avenue sewer, after which time it would be necessary to build a pumping plant to pump the dry-weather flow to the sewers to be constructed, which would lead to our East New York Purification Plant.

I recommend this main, however, at this time, as I believe, and have before stated in this report, that sewer improvements should precede all other improvements, and furthermore, it will be sound economy to provide mains for a territory which is subjected to building up in certain sections; thereby when lateral sewers are needed, said main will provide a ready outlet for them.

The sewers under first length pass through the rapidly building up portion of the city known as Rugby.

The second length, just above referred to, are those mains which will care for the drainage of that territory between the Eastern parkway and Rugby, and between Flatbush and Remsen avenue.

Ninth—

Coney Island avenue, between Foster avenue and Beverly road.

Estimated cost \$33,400 00

—an important main not petitioned for, which is necessary to convert the separate system in Flatbush to a combined system, and to provide for the proper drainage of that territory known as Prospect Park South, Matthews Park, and a portion of South Midwood.

The above recommended sewer improvements aggregating in cost \$2,857,060, a sum which I consider reasonable, to be set aside by the City authorities for important main sewer construction in this borough.

SEWERS—REPAIRING AND CLEANING.

I have heretofore, in my annual reports, given a brief resumé of the conduct of the affairs of maintaining and cleaning the sewerage system of the Borough of Brooklyn from reports made to me thereon by the Superintendent of Maintenance, Mr. M. J. Kennedy, and the Assistant Superintendent of Maintenance, Mr. Thomas J. McGee. As this division of the Bureau of Sewers is separate and apart from the construction division, and, as most of my time is taken up with the construction division, I cannot make as full a report as I believe is desired. Having verbally communicated this to you, and, as you have informed me that you will obtain a report from those under whom the work has been performed, they being acquainted with the details, I will refrain from writing further under this subject, excepting referring to the appropriation

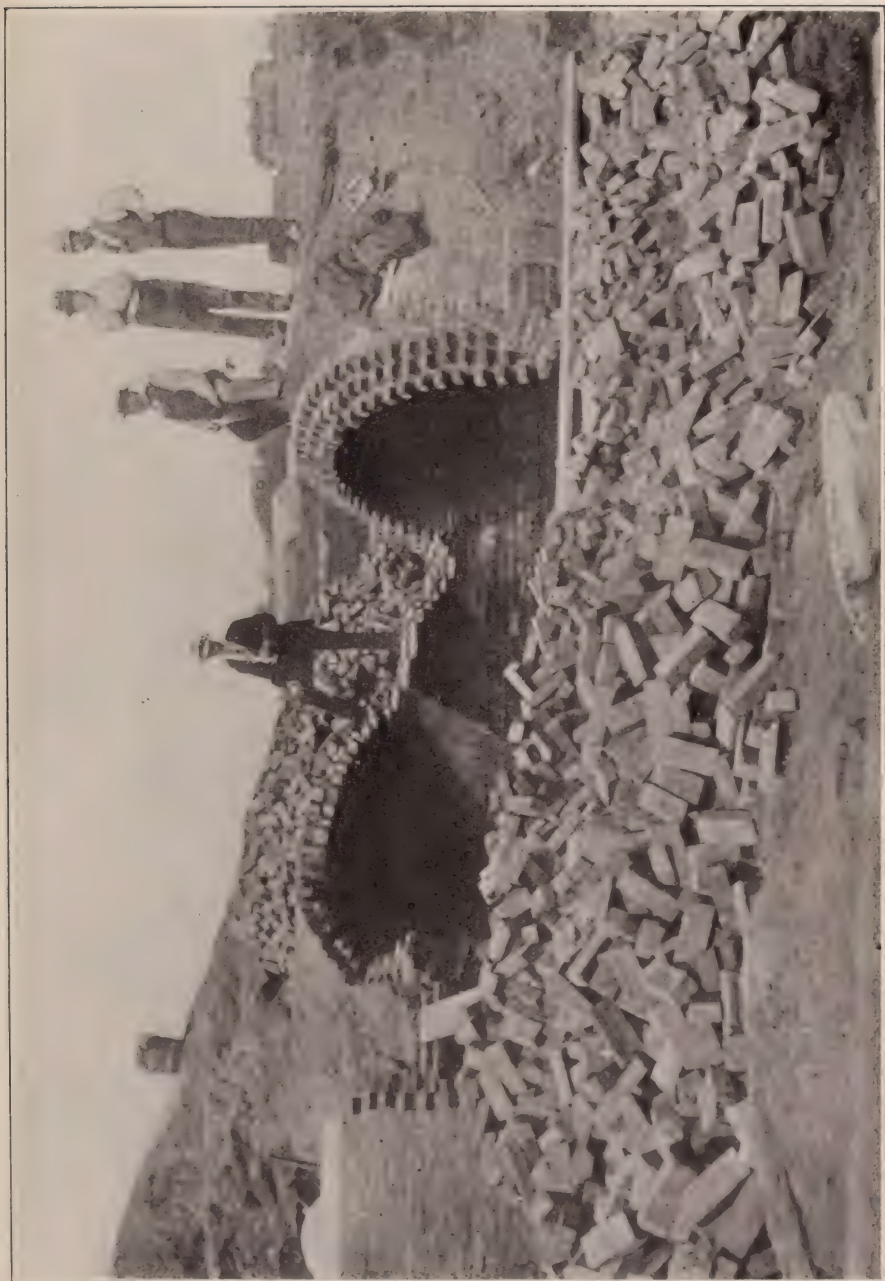
contracts, under the headings of maintaining the sewerage system, which will be hereinafter set forth.

The most important contract under this heading that was undertaken and completed during the year was the repairing of the Hegeman avenue sewer, between Alabama avenue and Williams avenue. The arch and side walls of said sewer were destroyed during an unprecedented rainfall of four inches per hour, which occurred in July, 1901. A contract was entered into to repair same during the year 1902, and the work was finished in the month of August. This sewer at the same point was carried away in 1899 during a very heavy storm. It was repaired, and the day after the repairs were completed it was again carried away, supposably by reason that the masonry at the first repair had not sufficient time to set. Therefore this repair has been the third which has taken place at this point. A very careful examination was made of the sub-soil before the last repair was made, and it was found that the ground had been filled in over the bed of an old creek, which had resulted in an unsuitable foundation. Piles were therefore driven across the bed of this old creek and the sewer founded thereon, making, without question, I believe, permanent repairs at this point.

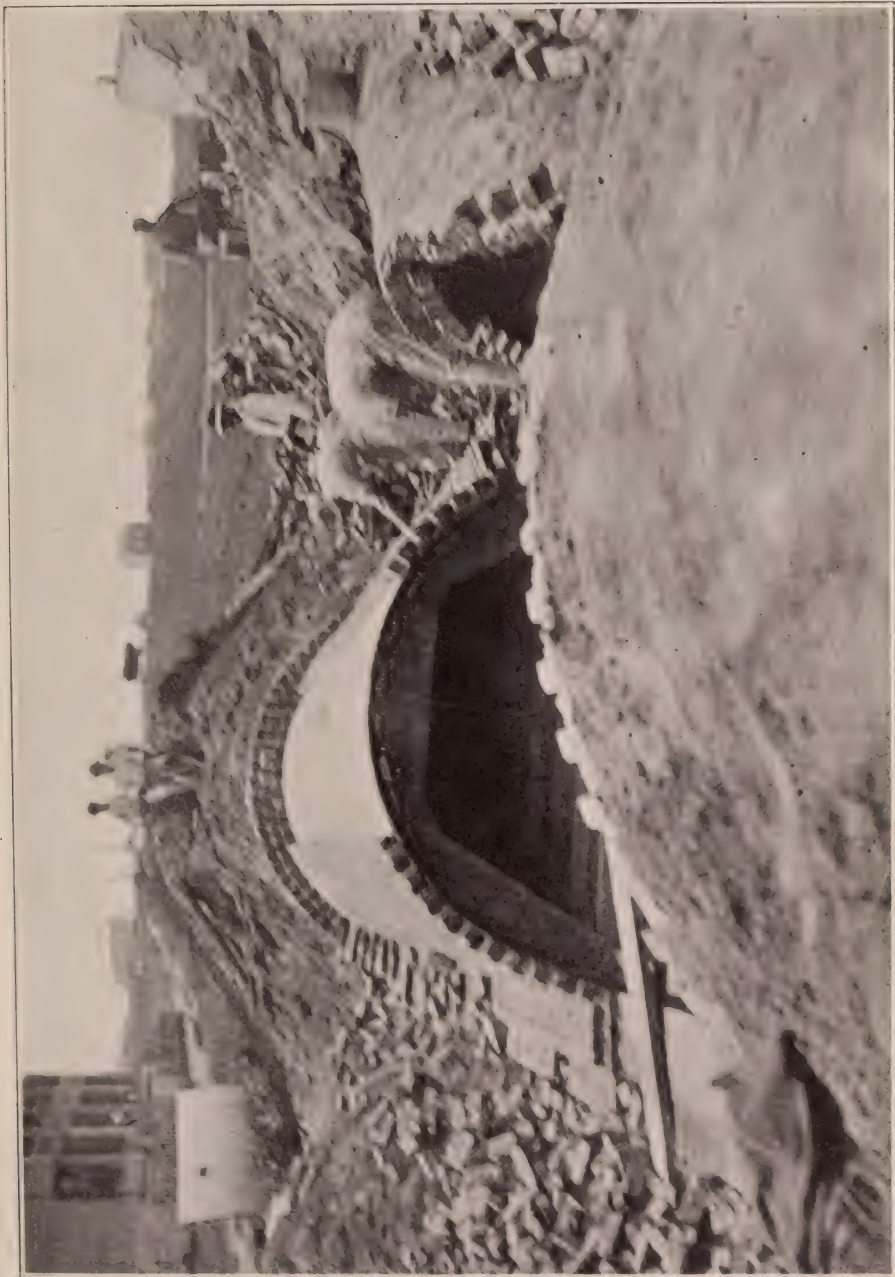
The cost of this work is as follows:

Paid contractor.....	\$4,851 96
Engineering	280 24
Inspection	296 00
Total	<u>\$5,438 10</u>

2d. The next important work under this heading was the building of a 48-inch wooden barrel sewer at the foot of Sackett street to replace a wooden trunk which had become beyond repair and which was subjected to constant injury from the fact that the old trunk was built and made a part of the pier, through which it passed, said pier being subjected to the impact of ferryboats entering the Hamilton avenue slip. The new construction was so built that it was entirely independent of the



REPAIRS TO HEGEMAN AVENUE SEWER BREAK IN PROGRESS.



REPAIRS TO HEGEMAN AVENUE SEWER BREAK IN PROGRESS.

pier; therefore the injury from the ferryboats in future will be, no doubt, avoided. The cost of this work was:

Paid contractor.....	\$5,732 82
Engineering	248 35
Inspection	383 00
Total	<u>\$6,364 17</u>

3d. The construction of a 30-inch cast-iron overflow sewer at Station No. 2 of the Thirty-first Ward Sewerage Disposal Works, the cost of same being:

Paid contractor.....	\$2,758 24
Engineering	37 50
Inspection	176 50
Total	<u>\$2,972 24</u>

This improvement has been constructed in such a manner that during exceedingly heavy rainfalls the storm water can be shut off from entering the purification plant and be diverted into Coney Island creek, and, as such can now be done, it will permit of the construction of receiving basins along Surf avenue, at Coney Island, which will, if they are built, relieve said avenue of the ponding of water along its entire length. Said ponding has, for many years past, been a nuisance and a serious detriment to the pleasures of the many thousands of our citizens during their visits to this metropolitan summer resort. I hope the authorization of these basins will soon take place. Estimates of cost have been furnished from this Bureau for their construction and the matter is now before the legislative authorities of the city for their consideration.

4th. An 18-inch by 18-inch wooden trunk sewer has been constructed through the pier at the foot of Fifteenth avenue to replace a wrought-iron sewer which formerly existed there; said iron sewer having deteriorated to such extent by rust that its continual leaking was a source of nuisance to the bathers in this vicinity. This improvement was advertised for, under

the assumption of replacing same with a cast-iron pipe, but the bids received were excessive and all of same were thrown out, and no contract was entered into. The plan was then changed to a wooden construction, which has been well built and will no doubt last until the Ninety-second street tunnel sewer is completed, when its further continuance will be unnecessary. The cost of this work has been :

Paid contractor.....	\$2,636 08
Engineering	63 35
Inspection	193 50
Total	<u>\$2,892 93</u>

TWENTY-SIXTH WARD DISPOSAL WORKS.

Throughout the year constantly, day and night, sewage has been purified in the Twenty-sixth Ward Disposal Works under the direction of Mr. H. H. Havill, engineer in charge of the plant.

1,904,609,424 gallons have been treated and pumped to the outfall flume. Of this amount, Engine No. 1 pumped 955,544,840 gallons; Engine No. 2, 949,064,584 gallons. In the treatment of this amount of sewage the following materials were used :

Cylinder packing.....	21 lbs.
Waste	391½ lbs.
Machine oil.....	307½ gals.
Cylinder oil.....	440½ "
White oil.....	380½ "
Sulphuric acid.....	9,928 lbs.
Oxide of manganese.....	4,384 "
Salt	5,784 "
Per chloride of iron.....	200 "
Quick lime.....	4,602 bbls.
Phenyl	130 gals.
Coal	<u>753 143/2,240 tons.</u>

969,768 cubic feet of soil was removed from the plant to the spoil banks. The average yearly duty of Engine No. 1 has

been 14,741,637 foot-pounds. The average yearly duty of Engine No. 2 has been 15,154,237 foot-pounds.

The employees of this plant have materially assisted the sewers, repairing and cleaning gangs.

THIRTY-FIRST WARD DISPOSAL WORKS.

In maintaining the purification plants in the Thirty-first Ward, which are located—two in the Coney Island portion of the Gravesend section of the borough, the other in Sheepshead Bay, the following is a statement of all work performed and of all materials used at these stations, viz.:

Station No. 2.—527,342,776 gallons of sewage purified and pumped to outfall.

Cylinder packing.....	55	lbs.
Waste	117	"
Machine oil.....	20¼	gals.
Cylinder oil.....	68	"
White oil.....	25½	"
Sulphuric acid.....	2,664	lbs.
Oxide of manganese.....	1,184	"
Salt	1,554	"
Quick lime.....	555	bbls.
Phenyl	110½	gals.
Sawdust	347	bbls.
Coal	395 1,903/2,240	tons

5,234 cubic feet of soil has been removed to the spoil banks. The average yearly duty of Engine No. 1 has been 8,260,834 foot-pounds. The yearly duty of Engine No. 2 has been 12,869,751 foot-pounds.

Station No. 3.—219,273,158 gallons of sewage purified and pumped to outfall.

Waste	99 1/10	lbs.
Machine oil.....	18 1/10	gals.
Cylinder oil.....	50 55/100	"
White oil.....	90 25/100	"
Sulphuric acid.....	2,833	lbs.
Oxide of manganese.....	1,245	"
Salt	1,645	"
Quick lime.....	360	bbls.
Phenyl	74	gals.
Sawdust	219	bbls.
Coal	371 225/2,240	tons

8,238 cubic feet of soil has been removed to the spoil banks. The average yearly duty of Engine No. 1 has been 4,127,264 foot-pounds. The yearly duty of Engine No. 2 has been 3,703,727 foot-pounds.

Station No. 4.—899,752,340 gallons of sewage purified and pumped to outfall.

Cylinder packing.....	37½	lbs.
Waste	167½	"
Machine oil.....	122 11/16	gals.
Cylinder oil.....	104 7/16	"
White oil.....	260¼	"
Sulphuric acid.....	1,296	lbs.
Oxide of manganese.....	575	"
Salt	2,196	"
Boiler compound.....	80	"
Quick lime.....	749¼	bbls.
Phenyl	69¼	gals.
Sawdust	219	bbls.
Sal soda.....	135	lbs.
Coal	493 598/2,240	tons

The soil removed to the spoil banks has been 14,906 cubic feet. The yearly duty of Engines Nos. 1 and 2 has been 14,913,939, and 10,926,217 foot-pounds.

The laboring forces at these three stations have, in addition to their duties at the purification plants, cleaned the sewerage system at Coney Island and Sheepshead Bay, and kept same in working order.

Extensive repairs have been performed at these three purification works, but as you have told me that you will embody a description of them in your report, I will not further refer to them, excepting to state that a new boiler furnished in Station No. 2 has been erected, in the terms of the contract, but that no payments were made for the same during the year 1902. The contract price was \$1,575.

The two 6-inch centrifugal pumps, erected at Stations Nos. 2 and 3, are completed, excepting a few minor details, and there has been paid on account for same \$1,350, leaving an outstanding liability against same of \$1,000.

The coal and lime contracts, also contracts for forage and rubber goods, which were entered into for the Twenty-sixth Ward Disposal Works, for the Thirty-first Ward Disposal Works and for the use of the repairing and cleaning forces, are tabulated hereinbefore in this report, showing the expenditures on same.

ASSESSMENT WORK.

Mr. George Winslow, Assistant Engineer, reports the following amount of work performed under his direction:

Sewer assessment cases prepared and forwarded.....	38
Parcels of land included in assessment districts.....	8,189
Number of maps made.....	747
Twenty-sixth Ward Sewer Assessment, Sixth Installment Apportioned:	
Number of parcels of land.....	20,098
Amount of installment confirmed by Borough President.	\$154,852 22
Eighth Ward Sewer Assessment, Eighth Installment:	
Number of parcels of land.....	1,901
Amount of installment confirmed by Borough President.	\$14,706 72
Private sewer cases, with maps, contracts, bonds, etc.....	8
Assessed Valuations Obtained:	
Number of cases.....	145
Amount of property examined.....	\$312,425,203 00
Number of feet of new sewers plotted on connection book	84,112

CEMENT TESTS.

Mr. W. H. Broadhurst, Chemist, reports the following work in testing cement of the Bureau:

Number of samples taken for testing.....	93
Number of tests of neat cement (24 hours).....	255
Number of tests of neat cement (7 days).....	255
Number of tests of mortar (2 to 1—7 days).....	205
Number of tests of mortar taken from "work".....	173
Total	888

In concluding this report I desire to thank you, and through you the Commissioner of Public Works and the Presi-

dent of the Borough of Brooklyn, for the many courtesies extended to me, and the support given me in administering the affairs of the Engineering Division of this Bureau.

I also desire to express my sincere appreciation of the services rendered by my Assistant Engineers in the conduct of this business. It is certainly due to their zeal and intelligent cooperation in assisting me that I have been able to successfully carry out the work of this division with care and dispatch.

I would like to mention each member of the corps in this report, and point out how excellently each one has performed the duties assigned to him, but for brevity will mention the heads of the different field parties, etc., and in doing so include each and every member of said parties or divisions as worthy of the thanks extended to said Engineers.

Assistant Engineers Jas. W. Magrath and F. C. Bates, as before mentioned in this report, have performed excellent services in the construction of the tunnel sewers.

Assistant Engineers Geo. T. Hammond, Geo. W. Martin, John F. Hammond and Wm. T. Bruorton have, as the heads of field parties in supervising the construction of sewers throughout the borough, been equally zealous and efficient in the performance of their duties.

Assistant Engineer Frank R. Bartlett, in charge of the office forces, has also rendered excellent services; while I also include Mr. Geo. W. Winslow, Assistant Engineer, in charge of assessment work, as equally entitled to praise for his services as those heretofore mentioned.

Yours respectfully,

HENRY R. ASSERSON,
Chief Engineer of Sewers, Borough of Brooklyn.

CITY OF NEW YORK, BOROUGH OF BROOKLYN, }
 BUREAU OF SEWERS, }
 JANUARY 5, 1902. }

Mr. JOHN THATCHER,

Superintendent of Sewers:

DEAR SIR—I herewith respectfully submit the annual report of work done and material used from January 1 to December 31, 1902, for maintaining the sewage system in the Borough of Brooklyn.

In reference to the same I desire to review the work done by the maintenance branch of this Bureau, calling your attention to a few of the items as contained in the summary of my report.

SEWER BASINS.

In this borough there are, approximately speaking, 8,000 sewer basins. The records show an examination was made of 61,816 basins, showing that each basin was examined on an average of 8 times. During the year 14,958 basins were cleaned, an increase of basins cleaned over 1901 of 5,717.

The report would show even a larger number cleaned, but for the fact that it was an impossibility for our inspectors to find enough basins that needed cleaning in the last month of the year to keep our regular force on that particular work; in fact a dirty basin was a rarity.

To appreciate the work in this particular line, I respectfully submit the costs of cleaning basins to that of the year 1901:

1901, basins cleaned, 9,241; cost, \$42,474.50; average cost per basin, \$4.60.

1902, basins cleaned, 14,958; cost, \$29,282.80; average cost per basin, \$1.96.

SEWERS.

During the year particular attention has been paid to the cleaning of sewers, both pipe and brick, but it is the large brick sewers I desire to make mention of. Two sections of the borough have received extra attention, which occupied the entire time of our sewer cleaning force. I refer to the sewer known as the Johnson and Knickerbocker avenue system; also the large brick sewers in the Twenty-sixth Ward, which lead to the Sewerage Disposal Works located at the foot of Hendrix street. Each of these systems are brick sewers ranging from 60 inches to 187 inches in diameter, which have miles of lateral sewers connecting into them.

Owing to the slight grade and the size of the sewers, the deposit settles in them to a very large extent, and can only be removed by the use of buckets and derricks, which have been used to good advantage. From the Johnson-Knickerbocker avenue sewer 900 cubic yards of deposit has been removed and carted away. From the brick sewers in the Twenty-sixth Ward, extending to to the Twenty-sixth Ward Disposal Works, 4,000 cubic yards of deposit was removed with buckets and derricks, besides the thousands of yards taken out of said station by the men located there, as the result of the men working in the sewer in that location (32,078 cubic yards having been taken out at this station from April 1 to December 31, 1902).

The North Twelfth street and Union avenue sewer has also been cleaned, 135 cubic yards of deposit having been taken out of the same and carted away.

All of the above sewers are now in good condition.

The Bensonhurst and Bath Beach district have been looked after very carefully, a force of men being stationed in these districts to properly care for the sewers and basins located there.

Special care was exercised and considerable attention was given the sewers and catch basins at Coney Island, and especially on Surf avenue, where thousands travel daily. I am free

to say that while in the past years numerous complaints have come to this office from that section of the city, and citizens have given their grievances to the press, not one complaint has been brought to my notice from any source relative to said location during the past year.

In the Twenty-sixth and Thirty-first Wards Sewage Disposal Works many changes have taken place, more especially in those situated in the Thirty-first Ward, where the several caissons were in a dilapidated condition at the beginning of the year, both buildings and machinery being greatly in need of repair.

New roofs were put on each caisson and the entire buildings painted, besides making the necessary repairs to the machinery.

The antiquated method of caring for the sewerage, in vogue at the beginning of the year, has been modernized by placing in each caisson a centrifugal pump, to discharge the sewerage direct, instead of having it taken out by cars, thereby causing considerable saving in both time and labor.

The total amount expended for the several caissons located at the Thirty-first Ward was \$52,957.45. Of this amount, \$30,745.33 was spent for labor, \$9,881.25 for repairs to plant and new machinery, and the balance, \$12,330.87, for lime, coal and general supplies.

The total amount expended at the Twenty-sixth Ward Disposal Works was \$36,598.55, of which \$22,643.33 was for labor and the balance, \$13,955.22 for coal, lime, scales, repairs to dynamo and general supplies.

The total amount appropriated for sewers repairing and cleaning, pay-rolls and supplies, was \$77,168.25. Of this amount \$48,757.25 was expended for labor, \$14,263.22 for supplies of all kinds, including manhole heads and covers, rubber goods, forage, one steam fire-engine for pumping out cellars in flooded districts, also repairs to building at North Portland Avenue Repair Yard, repairs to sewer outlets and drain-pipe at Caisson No. 2, and boarding and shoeing horses. \$12,000 was transferred to Bureau of Highways and Twenty-

sixth and Thirty-first Wards Disposal Works, leaving an appropriation on hand of \$2,147.78.

In conclusion, I would state that in all of my efforts I have been ably assisted by Mr. Thomas J. McGee, Assistant Superintendent of Maintenance.

Respectfully,

(Signed) MATTHEW J. KENNEDY,
Superintendent of Maintenance.

SUMMARY.

New sewer connections.....	2,093	
Repairs to sewer connections.....	690	
Basins examined.....	61,816	
" cleaned	14,958	
" altered	12	
" relieved	74	
" lowered	4	
connections cleaned and repaired.....	163	
pans reset.....	171	
repaired	149	
raised	2	
pans set (new).....	48	
hoods set.....	3	
cleared of snow.....	1,763	
connections made.....	1	
Deposit removed from basins.....	21,844	yds.
Manhole covers set.....	303	
" heads set.....	88	
" heads reset.....	8	
" raised	14	
" lowered	42	
" cleaned	256	
" repaired	33	
" covers deafened.....	15	
" built	3	
" altered	6	
Drains cleaned.....	651	
" relieved	16	
Dangerous holes filled in.....	22	
Cellars pumped out.....	17	
Market pans set and connected.....	3	
Dead animals removed from basin.....	8	
Sewers examined.....	1,566,592	ft.

Sewers Cleaned.

Pipe sewer.....	499,735	ft.
Brick sewer.....	63,700	"

The brick sewers cleaned included all sizes from 30-inch to 187-inch.

Amount of deposit taken out of Twenty-sixth Ward Disposal Works.....	32,078	cu. yds.
Amount of deposit taken out of brick sewers with derrick and buckets.....	5,035	"
Total	37,113	"
Sewers repaired.....	181	ft.

Material Used.

Brick	13,000	
Cement (bbls.).....	75	
Cement pipe.....	9	ft.
Granite basin heads.....	10	
" mud sills.....	6	
" back stones.....	3	
" cheek stones.....	4	
Spruce plank, 2 x 9 x 13.....	25	
Broken stone.....	20	yds.
Sand	16	"
Basin hoods.....	1	
Vitrified sewer-pipe.....	562	ft.
Manhole covers.....	303	
" heads	88	
Basin pans.....	48	

TABLE NO. 1, TO DECEMBER 31, 1902.
Contracts Entered Into During the Year 1902.

DATE OF CONTRACT.	LOCATION OF WORK.	NATURE OF WORK.	CONTRACTOR.	ESTIMATED COST.
Feb. 3, 1902	Eighty-first street, between Second avenue and Third avenue.....	Sewer construction.	Murphy Bros.....	\$1,049 57
" 5, "	Narrows avenue, between Bay Ridge avenue and Seventy-first street.	"	John J. Creem.....	3,483 10
" 11, "	Seventy-fourth street, between Fourth avenue and Seventh avenue, and outlet sewer in Sixth avenue, between Seventy-fourth street and Seventy-sixth street }	"	James P. Graham	5,293 85
" 11, "	Eighty-fourth street, between Second avenue and Third avenue.....	"	"	1,155 00
" 11, "	Starr street, between St. Nicholas avenue and Wyckoff avenue.....	"	Mathew T. Meagher...	665 30
Mar. 15, "	Temporary sewer on the east side of Seventy-ninth street, from Seventh avenue to Fifth avenue.....	"	James H. Holmes & Co.	2,597 35
" 31, "	Coal for Twenty-sixth and Thirty-first Wards Disposal Works	Coal.	A. J. McCollum.	4,582 80
Apr. 21, "	Lime for Twenty-sixth and Thirty-first Wards Disposal Works.....	Lime.....	Audley Clarke.....	6,528 00
" 24, "	(One) sixty-five horse-power boiler at station No. 2 of the Thirty-first Ward } Disposal Works.....	Steam boiler.....	Schluchner Bros.....	1,575 00
" 24, "	Repairing and reconstructing the main sewer in Hegeman avenue, between Hunsdale street and Williams avenue	Reconstruction and repairs	Mathew T. Meagher..	5,790 60
" 25, "	Furnishing and delivering forage to Bureau of Sewers.....	Forage.	Gasteiger & Schaefer...	1,311 74
May 14, "	Dredging Gowanus Canal, from its head to Third street.....	Dredging.	R. G. Packard Co.....	5,166 66
" 15, "	Forty-eight-inch wooden barrel outlet sewer at the foot of Sackett street.	Sewer construction.	{ The New York Sewer Construction Co.... }	5,537 00
June 4, "	Northwest corner Albemarle road and East Eleventh street, northwest corner Albemarle road and East Twelfth street, southwest corner Albemarle road and East Twelfth street, northwest corner Albemarle road and East Thirteenth street, northeast corner Albemarle road and East Thirteenth street, southeast corner of Albemarle road and East Thirteenth street, northwest corner Beverly road and East Twelfth street, northwest corner Beverly road and East Thirteenth street, northwest corner Beverly road and East Fourteenth street, northwest corner East Eleventh street and Turner place, northwest corner East Eleventh street and Hinckley place, east side East Eleventh street, at the low point opposite Turner place; east side East Eleventh street, at the low point opposite Hinckley place			
"		Receiving-basins ..	Sigretto & Mannino....	1,246 00

"	4,	"	Degraw street, between Third avenue and Fourth avenue.....	Sewer construction.	"	.....	1,062 91
"	6,	"	Hart street, between Irving avenue and Wyckoff avenue.....	"	James Jennings.....		1,329 73
"	13,	"	Nineteenth street, between high-water mark and bulkhead-line.....	"	John J. Creem.....		7,912 00
"	24,	"	North Eighth street, between Union avenue and Havemeyer street.....	"	James Jennings.....		1,447 30
"	24,	"	North Tenth street, between Roebling street and Union avenue.....	"	"		734 35
"	24,	"	Varick avenue, between Thames street and Johnson avenue.....	"	"		2,666 55
"	24,	"	Thirty-inch cast-iron pipe storm sewer at Caisson No. 2, Coney Island.....	"	Murphy Bros.		3,446 65
"	26,	"	Forty-ninth street, between Sixth avenue and Seventh avenue.....	"	William F. Riley		1,165 00
"	26,	"	Fifty-eighth street, between Seventh avenue and Eighth avenue.....	"	"		1,169 20
"	26,	"	Coles street, between Henry street and Hamilton avenue.....	"	Dennis Norton.....		1,500 00
July	10,	"	Albany avenue, between Degraw street and Eastern parkway.....	"	James H. Holmes & Co.		576 30
"	17,	"	Fulton street, between Williams place and Alabama avenue.....	"	James Jennings.....		1,091 97
"	17,	"	East corner of Seventeenth avenue and Benson avenue.....	Receiving-basin ...	"		93 00
"	17,	"	West corner of Eighty-fourth street and Twenty-first avenue.....	"	"		91 00
"	17,	"	South corner of Eighty-sixth street and Seventeenth avenue.....	"	"		91 00
Aug.	8,	"	Furnishing and delivering rubber goods to the Bureau of Sewers.....	Rubber goods ...	United and Globe Rubber Manufacturing Co. }		1,873 02
"	9,	"	Eighteen-inch by eighteen inch wooden trunk outlet sewer through pier at the foot of Fifteenth avenue	Repairs and re-construction...	John D. Walsh.....		2,818 70
"	15,	"	Easterly corner of Nineteenth avenue and Bath avenue.....	Receiving-basin ...	Sigretto & Mannino.....		100 00
"	15,	"	Northerly corner of Bay Twenty-sixth street and Bath avenue.....	"	"		100 00
"	16,	"	Southwest corner of Barley street and Pitkin avenue.....	"	James Jennings.....		93 00
"	15,	"	Southwest corner of Beverly road and East Eleventh street, southwest corner of Beverly road and East Thirtieth street, southwest corner of Beverly road and East Fourteenth street.....	"	Sigretto & Mannino....		285 00
"	27,	"	Fourth avenue, both sides, between Ninety-ninth street and One Hundred and First street, with temporary connection crossing at One Hundredth street.....	Sewer construction.	"		4,449 40

TABLE NO. 1—(Continued).

DATE OF CONTRACT.	LOCATION OF WORK.	NATURE OF WORK.	CONTRACTOR.	ESTIMATED COST.
Sept. 5, 1902	Easterly corner of Irving avenue and Stanhope street.	Receiving-basin ...	James Jennings	\$95 00
" 5, "	Southeast corner of Devoe and Judge streets.	" ...	"	117 00
" 6, "	Sixth avenue, between Forty-ninth street and Fiftieth street	Sewer construction.	James Riley	511 75
" 6, "	Eightieth street, between Fourth avenue and Fifth avenue.	"	"	1,569 75
" 6, "	Avenue G, from Coney Island avenue to Flatbush avenue; Flatbush avenue, westerly side, from its northerly intersection with Avenue G to its southerly intersection with Avenue G; Avenue G, from Flatbush avenue to Nostrand avenue; Nostrand avenue, from Avenue G to Avenue F; Avenue F, from Nostrand avenue to Paerdegat avenue, southerly side; Paerdegat avenue, southerly side, from Avenue F to East Forty-fifth street; East Forty-fifth street, from Paerdegat avenue, southerly side, to Avenue G; Avenue G, from East Forty-fifth street to Paerdegat avenue, southerly side; Paerdegat avenue, southerly side, from Avenue G to Flatlands avenue, and Avenue F, from East Twenty-sixth street to Nostrand avenue.	"	John McNamee.....	313,549 75
" 10, "	Eighty-ninth street, between Fourth avenue and Fifth avenue.	"	James Jennings.....	975 28
" 12, "	Mermaid avenue, between West Fifteenth street and Stillwell avenue.	"	Murphy Bros.....	1,399 86
" 13, "	Denton place, between First street and Carroll street	"	Dennis Norton	774 00
" 20, "	Bedford avenue, between Montgomery street and Flatbush avenue.	"	John J. Creem.....	116,865 75
" 27, "	Two centrifugal pumping plants, Caissons No. 2 and No. 3, Coney Island.	Pumping plants..	F. McSwegan, Harvey McSwegan and Oscar McSwegan	2,350 00
Oct. 1, "	Crossings under Atlantic avenue improvement subway at Howard avenue, Saratoga avenue, Rockaway avenue, Eastern Parkway Extension and Hopkinson avenue (chapter 499, Laws of 1897).	Sewer construction.	John O'Grady.....	35,715 00
" 2, "	Third avenue, between Seventy-ninth street and Eightieth street.	"	James Jennings.....	593 75
" 2, "	Seventy-sixth street, between Third avenue and Fourth avenue.	"	"	1,631 65
" 2, "	Fort Hamilton avenue, between Sixty-fifth and Sixty-sixth streets and outlet sewer in Sixty-fifth street, south side, between Fort Hamilton avenue and Tenth avenue.	"	"	2,242 00
" 10, "	Ridgewood avenue, between Euclid avenue and Norwood avenue.	"	"	2,919 50

"	15,	"	Sixtieth street, from Fourteenth avenue to Nineteenth avenue; Nineteenth avenue, from Sixtieth street to Fifty-seventh street.....	"	John J. Creem.....	2,779.93 00
Nov.	20,	"	Proposed street through northern portion of Dyker Beach Park, between Eleventh avenue and Seventh avenue, and in Ninety-second street, between Seventh avenue and New York Bay.....	"	James Malloy & Co....	633,256 25
"	21,	"	Third avenue, between Gowanus Canal and Third street.....	"	James Jennings.....	761 60
"	20,	"	Seventy-third street, between Third avenue and Fourth avenue, and outlet sewer in Fourth avenue, westerly side, between Seventy-third and Seventy-fourth streets.....	"	James P. Graham.....	2,610 00
Dec.	1,	"	Alteration of sewers, necessitated by Atlantic avenue improvement subway, in Franklin avenue, between Atlantic avenue and Brevort place; Brevort place, between Franklin avenue and Bedford avenue; Bedford avenue, between Brevort place and a point about 40 feet north of Fulton street; Grand avenue, between Atlantic avenue and a point about 165 feet north of Putnam avenue (Chapter 493, Laws of 1897).....	"	James H. Holmes & Co.	34,613 00
"	18,	"	Ovington avenue, between Third avenue and Fourth avenue, and outlet sewer in Silliman place, between Third and Second avenues, and in Second avenue, between Silliman place and Seventy-first street.....	"	James Jennings.....	5,121 20
*Feb.	25,	"	East Sixteenth street, between Church avenue and Caton avenue.....	Private sewer.....	Private permit.....	.....
*Apr.	11,	"	East Fourteenth street, between Church avenue and Caton avenue.....	"	"	.....
*May	7,	"	East Eighteenth street, from end of existing sewer north of Beverly road northerly 150 feet.....	"	"	.....
*July	2,	"	Grant avenue, from Pitkin avenue northerly 200 feet to existing sewer.....	"	"	.....
*Sept.	29,	"	Twentieth street, from end of sewer west of Third avenue westerly 100 feet.....	"	"	.....
*Oct.	24,	"	Union street, between Brooklyn and Kingston avenue.....	"	"	.....
			Total.....	.....	.....	\$1,535,243 13

* Date approved pursuant to section 395 of the Greater New York Charter.

TABLE NO. 2, TO DECEMBER 31, 1902.

*Payments of Retained Percentages Due in Year 1902 for
Contracts Completed Prior Thereto.*

LOCATION OF WORK.	NATURE OF WORK.	RETAINED PER- CENTAGE.
<i>Map J, District 22.</i>		
Centre street, between Court street and Summit west of Hamilton avenue, and a receiving-basin at the northwest corner of Hamilton avenue and Centre street.....	Sewer construction	\$79 80
Coffey street, between Dwight street and Richards street.....		116 80
Court street, between Lorraine street and Bulkhead; Bryant street, between Court street and Court street.....	"	959 40
Luqueer street, between Hamilton avenue and Hicks street.....		47 60
Otsego street, between Lorraine street and Sigourney street....	"	372 50
Verona street, between Dwight street and summit west of Richards street.....	"	122 40
<i>Map J, District 22, and Map N, District 29.</i>		
Carroll street, between Gowanus canal and Bond street; also receiving-basin southwest corner of Denton place.....	"	84 60
<i>Map N, District 29.</i>		
East side Second avenue, between Thirty-ninth street and Fortieth street; west side Second avenue, between Thirty-ninth street and Forty-sixth street.....	"	333 03
Sackett street, between Third avenue and Fourth avenue	"	152 24
Fifty-third street, between Fifth avenue and Sixth avenue.....	"	155 80
<i>Map O, District 37.</i>		
Main Relief Sewer Extension, Section 3, Greene avenue, between Patchen avenue and Bushwick avenue; Bushwick avenue, between Greene avenue and Weirfield street; Weirfield street, between Bushwick avenue and Evergreen avenue; Evergreen avenue, between Weirfield street and Halsey street; Halsey street, between Evergreen avenue and Central avenue; Central avenue, between Halsey street and Eldert street.....	"	16,983 00
<i>Map O, District 37, and Map S, District 39.</i>		
Rochester avenue, between Prospect place and Douglass street; Sterling place, between Rochester avenue and Ralph avenue	"	606 96
<i>Map R, District 38.</i>		
Elizabeth street, between Van Brunt street and summit of street east.....	"	57 00
<i>Map S, District 39.</i>		
Watkins street, between Hegeman avenue and summit south of Livonia avenue.....	"	479 32

TABLE NO. 2—(Continued).

LOCATION OF WORK.	NATURE OF WORK.	RETAINED PER-CENTAGE.
Northeast and northwest corners of Thatford avenue and Dumont avenue, and Thatford avenue, between 215 feet south of Livonia avenue and Newport avenue, and Newport avenue, between Thatford avenue and Osborn street.....	Sewer construction	\$276 96
Northwest corner Vermont street and Belmont avenue.....	Basin construction	15 30
Jamaica avenue, between Hale avenue and Dresden street.....	Sewer construction	68 75
<i>Map T, District 40.</i>		
Seventh avenue, between Fifty-first and Fifty-second street.....	"	130 50
Fifty-seventh street, between Seventh avenue and Eighth avenue	"	96 72
Northwest corner East Eleventh street and Avenue C.....	Basin construction	14 70
Southwest corner East Twelfth street and Beverly road.....	"	14 70
Northwest corner Beverly road and East Eighteenth street.....	"	14 70
Northwest corner Beverly road and Coney Island avenue.....	"	14 70
Northwest corner Fennimore street and Nostrand avenue.....	"	14 70
Northwest and southwest corners Hawthorne street and Rogers avenue.....	"	29 80
<i>Map V, District 42.</i>		
Eightieth street, between Second avenue and Third avenue.....	Sewer construction	122 24
Eighty-sixth street, between Fourth avenue and New York Bay; First avenue, between Seventy-ninth street and Eighty-sixth street; Second avenue, between Seventy-ninth street and Eighty-sixth street; Shore road, between Eighty-sixth street and a temporary outlet foot of Eighty-third street.....	"	5,873 20
<i>Map W, District 43.</i>		
Northeast corner Bay Thirteenth street and Bath avenue.....	Basin construction	14 70
Northerly corner Bay Twenty-second street and Cropsey avenue	"	14 90
<i>Map Z, District 46.</i>		
Eighty-sixth street, between Twenty-first avenue and Bay Twenty-eighth street.....	Sewer construction	45 72
Total.....		\$27,312 74

TABLE NO. 3, TO DECEMBER 31, 1902.

Contracts on which all Work was Completed during the Year 1902.

DATE OF COMPLETION.	LOCATION OF WORK.	PIPE SEWERS.				BRICK SEWERS.										CAST-IRON, inch.	CURB YARDS.	MAN HOLES.	BASINS.	TOTAL COST.
		12-inch.	14-inch.	18-inch.	24-inch.	18-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	72-inch.	78-inch.	84-inch.	10-inch.					
	<i>Map L, District 24.</i>																			
June 24, 1902	North Eighth street, between Union avenue and Havenlyer street.....	.....	.....	492.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	\$1,628.78
" 24, "	North Tenth street, between Roebling street and Union avenue.....	.....	348.0	35.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	805.00
	<i>Map L, District 24.</i>																			
Oct 1, 1901	Kingsden avenue, between Eastern Parkway and President street.....	.....	320.0	266.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	1,044.78
Nov. 27, "	Park avenue, between Emerson place and Clarkson avenue.....	279.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	1,004.57
July 1, 1902	Arling avenue, between Dugraw street and Eastern Parkway.....	201.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	702.34
	<i>Map L, District 24, and Map T, District 40.</i>																			
" 5, 1902	Bedford avenue, between Union street and Montgomery street.....	649.5	332.0	332.0	.....	.....	.....	10.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	\$1,114.11
	<i>Map N, District 29.</i>																			
June 4, 1902	Dugraw street, between Third avenue and Fourth avenue.....	649.0	47.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1,195.81
	<i>Map O, District 37.</i>																			
July 11, 1900	Huron street, between Provost street and the East river.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4'	865.0	.....	.....	.....	2	.....	112,195.70
	Provost street, between Huron street and Greenpoint avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.6'	.....	.....	.....	.....	.....	.....	
	Greenpoint avenue, between Provost street and Jewell street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	111.1	.....	.....	.....	.....	1	.....	
	Jewell street, between Greenpoint avenue and Norman avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12.0	77.0	.....	.....	.....	.....	1	.....	
	Norman avenue, between Jewell street and 100 feet east of Humboldt street.....	.....	.....	.....	.....	.....	10.0	.....	.....	.....	220.0	.....	.....	.....	.....	.....	.....	4	.....	7,149.58
Oct 1, 1901	Meserole avenue, between Jewell street and Diamond street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	
	Gardner avenue, between Johnson avenue and Flushing avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	177.0	.....	.....	.....	.....	.....	.....	.....	.....	4,253.95
Dec. 4, "	Waterbury street, between Scholes street and Meserole street.....	245.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	
	Meserole street, between Waterbury street and Morgan avenue.....	1,780.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	1	827.80
Feb 11, 1902	Bogart street, between Meserole street and Johnson avenue.....	.....	.....	528.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Jan 1, 1902	Starr street, between St. Nicholas avenue and Wyckoff avenue.....	477.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	1,481.07
Jan 1, "	Hart street, between Irving avenue and Wyckoff avenue.....	731.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	
" 24, "	Varick avenue, between Thames street and Johnson avenue.....	257.0	621.0	240.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	6	2,884.52
	<i>Map S, District 39.</i>																			
Nov. 27, 1901	Belmont avenue, between Cleveland street and Ashford street.....	180.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	541.43
Dec. 13, "	Riverdale avenue, between Osborn street and Thatford street.....	236.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1,147.40

TABLE NO 3.—(Continued).

DATE OF CONTRACT.	LOCATION OF WORK.	PIPE SEWERS.				BRICK SEWERS.										CAST IRON, 30-inch.	CULIC YARDS.	MAN HOLES.	BASINS.	TOTAL COST.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		12-inch.	15-inch.	18-inch.	24-inch.	18-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	72-in. h.	78-inch.	84-inch.	162-inch.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Map U, District 41.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Dec. 3, 1901	Bay Ridge avenue, between Narrows avenue and Third avenue.....		763.0	786.0	717.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

TABLE NO. 3—(Continued).

DATE OF CONTRACT	LOCATION OF WORK.	PIPE SEWERS.				BRICK SEWERS.										CUL- VERTS.	CUL- VERTS.	MAN- HOLES.	BASINS.	TOTAL COST.
		12-inch.	15-inch.	18-inch.	24-inch.	18-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	72-inch.	78-inch.	84-inch.	162-inch.					
June 13, 1901	Ninety-ninth street, between Third avenue and Fort Hamilton avenue.....																	88,411.40		
	Third avenue, between Ninety-ninth street and Shore road.....																1			
	Shore road, between Third avenue and Fourth avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1				
	Fourth avenue, between Shore road and One Hundred and First street.....																		1	
	One Hundred and First street, between Fourth avenue and Fort Hamilton avenue.....																			1
	Fort Hamilton avenue, between One Hundred and First street and Ninety-second street....	1,224.0																		
Coney Island.																				
Oct. 25, "	West Sixteenth street, between Surf avenue and Neptune avenue.....	1,302.6																101.14		
June 24, 1902	30-inch cast-iron pipe storm sewer at Caisson No. 2.....																	2,775.51		
Nov. 15, 1901	Intersection of northerly side of Plaza at the foot of Grand street and the easterly curb line of River street.....																	8,000.00		
Sept. 5, 1902	Easterly corner of Irving avenue and Stanhope street.....																	122.25		
Dec. 13, "	Northeast corner of St. Nicholas avenue and Harman street.....																	170.00		
Sept. 17, 1901	* Southwest corner of Glenmore avenue and Essex street.....																	105.50		
Aug. 15, 1902	Southwest corner of Barbey street and Pitkin avenue.....																	101.45		
Nov. 27, 1901	Northwest corner of Winthrop street and Rogers avenue.....																	123.81		
June 4, 1902	Northwest corner of Albemarle road and East Eleventh street.....																	1,000.00		
	Northwest corner of Albemarle road and East Twelfth street.....																			
	Southwest corner of Albemarle road and East Twelfth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of Albemarle road and East Thirteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northeast corner of Albemarle road and East Thirteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Southwest corner of Albemarle road and East Thirteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Southeast corner of Albemarle road and East Thirteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of Beverly road and East Twelfth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of Beverly road and East Thirteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of Beverly road and East Fourteenth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of East Eleventh street and Turner place.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	Northwest corner of East Eleventh street and Hinckley place.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	East side of East Eleventh street at the low point opposite Turner place.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	East side of East Eleventh street at the low point opposite Hinckley place.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....				

* Item of construction reported in 1901.

TABLE NO. 3—(Concluded).

DATE OF CONTRACT	LOCATION OF WORK.	PIPE SEWERS.														CIVIL ENGR.	COST VALUED	MAN. HOURS	BASINS	TOTAL COST.
		12-inch.	15-inch.	18-inch.	24-inch.	18-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	72-inch.	78-inch.	84-inch.	108-inch.					
Aug. 15, 1902	Southwest corner of Beverly road and East Eleventh street.....																			
	Southwest corner of Beverly road and East Thirteenth street.....																			\$347.57
	Southwest corner of Beverly road and East Fourteenth street.....																			
Dec. 2, 1901	Northeast corner of Newkirk avenue and Ocean avenue.....																			
	Northeast and northwest corners of Ocean avenue and Foster avenue.....																			
July 17, 1902	East corner of Seventeenth avenue and Benson avenue.....																			117.00
" 17, "	West corner of Eighty-fourth street and Twenty-first avenue.....																			103.01
" 17, "	South corner of Eighty-sixth street and Seventeenth avenue.....																			113.00
Aug. 15, "	Northerly corner of Bay Twenty-sixth street and Bath avenue.....																			103.01
" 17, "	Easterly corner of Nineteenth avenue and Bath avenue.....																			103.01
May 11, "	Dredging Gowanus Canal from its head to Third street.....																			1,000.00
	Total.....	33,823.3	7,010.8	5,180.2	2,004.6	120.9	2,279.6	877.5	785.8	670.7	940.2	125.0	28.7	805.0	11.0	1.0	103.1	1.0	0	\$8,000.00

		REPAIRS AND RECONSTRUCTION.				WOODEN TRUNK 18 IN. x 18 IN.	WOODEN BUL. 48-INCH.	PIPE SEWERS 72-INCH.	MAN. HOURS	
Apr. 24, 1902	Hegeman avenue, between Hinsdale street and Williams avenue.....									\$1,177.31
May 15, "	48-inch wooden barrel outlet sewer at the foot of Sackett street.....						252.0			1,800.00
Aug. 9, "	18 inch x 18 inch wooden trunk outlet sewer through pier at the foot of Fifteenth avenue.....					604.0				2,892.93
	Total.....					604.0	252.0	1,000.0	1	\$15,861.39
	Grand Total.....									\$8,000.00

Payments to Contractors, etc., for the year 1902.....	\$320,479.61
Engineering and inspection for the year 1902.....	17,109.39
Cost for the year 1902.....	2,476,800.00
Cost prior to the year 1902.....	470,185.61
Amount retained, guarantee for repairs.....	200.00
Total cost of contracts completed during year 1902.....	\$883,974.61

TABLE NO. 4, TO DECEMBER 31, 1902.

Contracts in Progress.

DATE OF CONTRACT	LOCATION OF WORK	PIPE SEWERS.				BRICK SEWERS.										CAST-IRON PIPE, 24 inch.	MAN-HOLES	BASINS	ESTIMATED TOTAL COST	
		12 inch.	15 inch.	18-inch	24-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	60-inch.	84-inch.	96-inch	108-inch	18-inch					24 inch.
Map J, District 22.																				
June 26, 1902	Coles street, between Henry street and Hamilton avenue.....	217.5	150														4	2	\$ 1,000.00	
Map N, District 29.																				
June 13, 1902	Nineteenth street, between high-water mark and bulkhead line.....						506										6		7,413.00	
Sept. 7, "	Sixth avenue, between Forty-ninth street and Fifth street.....	251.6															4		\$ 11,780.00	
" 13, "	Denton place, between First street and Carroll street.....	306															3		271.00	
Nov. 21, "	Third avenue, between Gowanus Canal and Third street.....																		7,140.00	
Map O, District 37.																				
July 8, 1901	Wyckoff avenue, between Myrtle avenue and Flushing avenue.....		853	76				2,526	74								12		2,382.00	
	Flushing avenue, between Irving avenue and Gardner avenue.....	810	....	....	....	....	....	....	181	....	....	....	....	....	....	....	13	1		
	Johnson avenue, between Gardner avenue and Knickerbocker avenue.....	....	....	....	....	....	....	....	2,274	....	....	....	....	....	....	....	16	6		
Map S, District 39.																				
Oct. 10, 1900	Belmont avenue, between Sackman street and Vesta avenue.....																		1,018.95	
July 17, 1902	Fulton street, between Williams place and Alabama avenue.....	522																	1,091.47	
Oct. 10, "	Ridgewood avenue, between Euclid avenue and Norwood avenue.....																		5,042.50	
Map T, District 40.																				
July 5, 1901	Fifteenth street, between Prospect Park West and old City line.....	21	14	49													1	1	8,000.00	
	Sixteenth street, between Prospect Park West and old City line.....	799	....	45	....	....	....	....	....	....	....	....	....	....	....	....	6	1		
	Windsor place, between Prospect Park West and old City line.....	456.1	12.4	45	....	....	....	....	....	....	....	....	....	....	....	....	4	1		
	Prospect avenue, between Prospect Park West and Vanderbilt street.....	50	45	....	....	....	999	....	....	....	....	....	....	....	....	....	9	1		
	Seventeenth street, between Prospect Park West and Terrace place.....	1,495.5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	1		
	Eighteenth street, between Prospect Park West and Terrace place.....	748	43	....	....	....	....	....	....	....	....	....	....	....	....	....	8	1		
	Nineteenth street, between Prospect Park West and Terrace place.....	2,179	40	....	....	....	....	....	....	....	....	....	....	....	....	....	23	1		
	Gravesend avenue, between Tenth avenue and Vanderbilt street.....	48	....	401	100	....	....	....	....	....	....	....	....	....	....	....	10	....		
	Eleventh avenue, between Eighteenth street and Fifteenth street.....	1	50	270	20	327	....	....	....	....	....	....	....	....	....	....	2	2		
	Terrace place, between Eighteenth street and Prospect avenue.....	376	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....		
	Fort Hamilton avenue, between Sixty-fifth street and Sixty-sixth street.....																			2,242.00
	Sixty-fifth street, south side, between Fort Hamilton avenue and Tenth avenue.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		
	Tenth avenue, between Seventy-seventh street and Sixty-second street.....	234	....	265	247	62	....	....	....	12	....	....	....	....	....	....	8	23		
Aug. 13, 1901	Sixty-second street, between Tenth avenue and Sixth avenue.....																		773,227.50	
	Sixth avenue, between Sixty-second street and Sixty-fourth street.....	....	....	....	....	....	....	....	....	....	....	....	51	....	....	....	....			
	Sixty-fourth street, between Sixth avenue and New York Bay.....	....	....	74	....	23	....	32.5	....	....	....	....	134	2,347	....	7	....			

DATE OF CONTRACT.	LOCATION OF WORK.	PIPE SEWERS.					BRICK SEWERS.										CAST- IRON PIPE, 24-inch.	MAN- HOLES.	BASINS.	ESTIMATED TOTAL COST.
		12-inch.	15-inch.	18-inch.	24-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	60-inch.	84-inch.	36-inch.	48-inch.	60-inch.	72-inch.				
Sept. 23, 1902	Bedford avenue, between Montgomery street and Flatbush avenue.....										750	640	1,100				10		\$117,805.78	
Oct. 1, 1902	Sixtieth street, between Fourteenth avenue and Nineteenth avenue.....																		\$27,203.00	
	Nineteenth avenue, between Sixtieth street and Fifty-seventh street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Map U, District 41.																			
Dec. 6, 1902	Second avenue, between Seventy-first street and Stillman place.....																		\$121.20	
	Stillman place, between Second avenue and Third avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Ovington avenue, between Third avenue and Fourth avenue.....																			
	Map U, District 41, and Map V, District 42.																			
Nov. 23, 1902	Seventy-third street, between Third avenue and Fourth avenue.....																		\$2,510.00	
	Fourth avenue, west side, between Seventy-third street and Seventy-fourth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Map V, District 42.																			
Dec. 13, 1902	Eighty-eighth street, between First avenue and Fifth avenue.....	1,462.4	594.1	802.2															\$24,779.85	
	Eighty-ninth street, between Third avenue and Fourth avenue.....	699.4	81.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	First avenue, between Eighty-sixth street and Ninety-second street.....	251.7	257.4	516.8	50.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Second avenue, between Eighty-sixth street and Eighty-eighth street.....	.....	.....	260	264.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Third avenue, between Eighty-eighth street and Eighty-ninth street.....	.....	218.5	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Fourth avenue, both sides, between Eighty-sixth street and Ninety-second street.....	1,000.2	1,105	810	266.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Fifth avenue, between Eighty-sixth street and Ninetieth street.....	879.7	82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Map W, District 43.																			
Nov. 20, 1902	Proposed street north of Dyker Beach Park, between Eleventh avenue and Seventh avenue.....																		\$14,250.20	
	Ninety-second street, between Seventh avenue and New York Bay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Map Y, District 45.																			
Sept. 6, 1902	Avenue G, between Coney Island avenue and Flatbush avenue.....								620	1,315	740							15	\$1,0049.70	
	Flatbush avenue, west side, between Avenue G north intersection and Avenue G south intersection.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Avenue G, between Flatbush avenue and Nostrand avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Nostrand avenue, between Avenue G and Avenue F.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Avenue F, between East Twenty-sixth street and Paerdegat avenue, south side.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Paerdegat avenue, south side, between Avenue F and East Forty-fifth street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	East Forty-fifth street, between Paerdegat avenue, south side and Avenue G.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Avenue G, between East Forty-fifth street and Paerdegat avenue, south side.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Paerdegat avenue, south side, between Avenue G and Flatlands avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		

TABLE NO. 4—(Concluded).

DATE OF CONTRACT	LOCATION OF WORK.	PIPE SEWERS.					BRICK SEWERS.										CAST-IRON PIPE, M. IN 1	MAN-HOLES	BASINS	ESTIMATED TOTAL COST
		12-inch.	15-inch.	18-inch.	24-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	60-inch.	84-inch.	96-inch.	118-inch.	180-inch.					
	<i>Coney Island.</i>																			
Sept. 12, 1902	Merrill avenue, between West Fifteenth street and Stillwell avenue.....	.....	334	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	\$1,099 50
	<i>Sewer Crossings under Atlantic Avenue, Improvement Subway.</i>																			
	Howard avenue at Atlantic avenue.....	.....	.....	.....	.....	117	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	
	Saratoga avenue, between Atlantic avenue and Hull street.....	.....	.....	.....	.....	316	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Oct. 1, 1902	Rockaway avenue, between Atlantic avenue and Bergen street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Eastern Parkway Extension, between Atlantic avenue and Dean street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Hopkinson avenue at Atlantic avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	<i>Alteration of Sewers Necessitated by Atlantic Avenue Improvement Subway.</i>																			
	Franklin avenue, between Atlantic avenue and Brevoort place.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Brevoort place, between Franklin avenue and Bedford avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dec. 1, 1902	Bedford avenue, between Brevoort place and a point 40 feet north of Fulton street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54,111 20
	Grand avenue, between Atlantic avenue and a point 165 feet north of Putnam avenue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sept. 5, "	Southeast corner Devoe and Judge streets.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117 00
Mar. 10, "	Coal for Twenty-sixth and Thirty-first Wards Disposal Works.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,580 30
Apr. 21, "	Coal for Twenty-sixth and Thirty-first Wards Disposal Works.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,220 00
" 14, "	1. 65-horse power Boiler at Station No. 2, Thirty-first Ward Disposal Works.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,575 00
Sept. 17, "	2. Centrifugal Pumping Plants, Caissons No. 2 and No. 3, Coney Island.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,000 00
Aug. 8, "	Furnishing and delivering rubber goods to Bureau of Sewers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,700 00
Apr. 25, "	Furnishing and delivering forage to Bureau of Sewers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,411 74
	Total.....	12,898.1	3,355.4	3,650	2,784.6	864	1,805	22.5	3,216	1,830	1,490	1,300	1,100	185	2,327	.....	.....	.....	.....	\$2,171,985.4

Payments to Contractors, etc., for year 1902..... \$2,170,985 96
 Engineering and inspection for year 1902..... 27,917 03

Cost for year 1902..... \$22,902 99
 Cost prior to year 1902..... 54,155 94

Total cost of contracts..... \$344,081 93

TABLE NO. 5, TO DECEMBER 31, 1902.

Built by Private Contract during the Year 1902.

DATE APPROVED PURSUANT TO SECTION 365 OF GREATER NEW YORK CHARTER.	LOCATION.	12-INCH PIPE SEWERS.	15-INCH PIPE SEWERS.	MAN- HOLES.
<i>Contracts Completed.</i>				
Oct. 24, 1902	Map L, District 24—Union street, between Brooklyn avenue and Kingston avenue.....	700	76	8
Sept. 29, "	Map N, District 29—Twentieth street, from end of sewer west of Third avenue, westerly 100 feet	104	..	1
July 2, "	Map S, District 39—Grant avenue, from Pitkin avenue, northerly 200 feet to existing sewer. (	201	..	2
Feb. 25, "	Map T, District 40—East Sixteenth street, between Church avenue and Caton avenue.....	670	..	7
Apr. 11, "	Map T, District 40—East Fourteenth street, between Church avenue and Caton avenue.....	701	..	7
May 7, "	Map T, District 40—East Eighteenth street, from end of existing sewer north of Beverley road, northerly 150 feet	150	..	1
Dec. 24, 1901	Coney Island—West Sixth street, between Neptune avenue and Canal avenue	361	..	3
Total.....		2,887	75	29
Engineering and inspection for year 1902.....			\$465 31	
Refund to owners.....			482 61	
Total expenditure.....			\$947 92	

TABLE NO. 6.

Total Amount of Work Done on Construction of Sewers, from January 1 to December 31, 1902.

	FEET.	FEET.	MILES.	MILES.
12-inch vitrified stoneware pipe sewer, public contract	46,721.4		8.849	
15 " " " " "	10,386.2		1.967	
18 " " " " "	8,836.2		1.674	
24 " " " " "	4,879.2		0.924	
		70,823.0		13.414
24 " cast-iron pipe sewer, public contract	36.0		0.007	
30 " " " " "	152.0		0.028	
		188.0		0.035

TABLE NO. 6—(Continued).

	FEET.	FEET.	MILES.	MILES.
18-inch brick sewer, public contract.....	120.9		0.023	
30 " " " "	3,143.6		0.595	
36 " " " "	2,682.5		0.508	
42 " " " "	808.3		0.153	
48 " " " "	3,886.7		0.736	
54 " " " "	4,776.2		0.905	
60 " " " "	1,490.0		0.282	
72 " " " "	12.0		0.002	
78 " " " "	289.0		0.055	
84 " " " "	2,105.0		0.399	
96 " " " "	1,100.0		0.208	
162 " " " "	11.0		0.002	
168 " " " "	185.0		0.035	
180 " " " "	2,397.0		0.454	
12 " vitrified stoneware pipe sewer, private {		23,007.2		4.357
contract.....	2,837.0		0.547	
15 " vitrified stoneware pipe sewer, private {				
contract.....	76.0		0.014	
		2,963.0		0.561
Total.....	.....	96,981.2	.....	18.367
<i>Reconstruction and Repairs.</i>				
18-inch by 18-inch wooden sewer.....	654.0		0.126	
48 " wooden sewer.....	252.0		0.048	
		916.0		0.174
96 " brick sewer.....	180.0		0.034	
		180.0		0.034
Total.....	.....	1,096.0	.....	0.208

Net increase in mileage for year 1902 = 18.567 miles.

TABLE No. 7.

*Number of Miles of Sewers Completed from January 1, 1858,
to December 31, 1902.*

SIZE.	MILES.	SIZE.	MILES.
6-inch cast-iron pipe.....	0.336	96-inch brick.....	1.092
9 " pipe.....	3.942	102 " ".....	0.869
12 " ".....	321.897	108 " ".....	1.530
15 " ".....	90.549	120 " ".....	2.565
16 " cast-iron pipe.....	0.272	126 " ".....	0.875
18 " pipe.....	60.223	132 " ".....	0.815
18 " brick.....	0.023	144 " ".....	2.680
24 " cast-iron pipe.....	0.007	162 " ".....	0.721
24 " pipe.....	19.898	168 " ".....	0.795
24 " brick.....	10.720	180 " ".....	1.320
30 " cast iron pipe.....	0.028	187 " ".....	0.289
30 " pipe.....	1.420		
30 " brick.....	23.025	<i>Built Under Private Contract.</i>	
36 " ".....	20.028	9-inch pipe.....	4.741
42 " wooden.....	0.122	12 " ".....	39.920
42 " brick.....	10.278	15 " ".....	9.726
48 " cast-iron pipe.....	0.231	18 " ".....	4.922
48 " wooden.....	0.315	24 " ".....	0.626
48 " brick.....	13.573	30 " brick.....	0.507
54 " ".....	5.733	36 " ".....	0.234
60 " ".....	7.924	42 " ".....	0.050
66 " ".....	3.392	48 " ".....	0.140
72 " ".....	6.552		
78 " ".....	5.312	<i>Built by the Department.</i>	
84 " ".....	1.548	12-inch pipe.....	0.200
90 " ".....	1.071		
94 " ".....	0.190	Total.....	683.226
		184-inch wooden flume.....	0.623

TABLE NO. 8.

*Number of Connections made with Sewers from 1859 to
December 31, 1902.*

YEAR.		No.	YEAR.		No.
1859.....	Connections made.....	422	1881.....	Connections made.....	1,872
1860.....	".....	1,695	1882.....	".....	2,058
1861.....	".....	4,896	1883.....	".....	2,626
1862.....	".....	3,168	1884.....	".....	3,079
1863.....	".....	1,984	1885.....	".....	3,162
1864.....	".....	1,301	1886.....	".....	3,093
1865.....	".....	1,519	1887.....	".....	3,295
1866.....	".....	3,605	1888.....	".....	3,302
1867.....	".....	2,922	1889.....	".....	3,937
1868.....	".....	3,286	1890.....	".....	3,168
1869.....	".....	3,501	1891.....	".....	3,137
1870.....	".....	2,972	1892.....	".....	3,068
1871.....	".....	2,861	1893.....	".....	2,245
1872.....	".....	2,845	1894.....	".....	2,174
1873.....	".....	5,276	1895.....	".....	3,440
1874.....	".....	3,648	1896.....	".....	3,696
1875.....	".....	2,786	1897.....	".....	3,300
1876.....	".....	2,237	1898.....	".....	2,562
1877.....	".....	2,110	1899.....	".....	2,608
1878.....	".....	1,999	1900.....	".....	2,478
1879.....	".....	1,903	1901.....	".....	2,244
1880.....	".....	1,664	1902.....	".....	2,093
Total.....					121,242

BUREAU OF PUBLIC BUILDINGS AND OFFICES, }
 December 31, 1902. }

Hon. WILLIAM C. REDFIELD,
Commissioner of Public Works,
 Borough of Brooklyn, N. Y.:

DEAR SIR—In presenting to you the first annual report of the Bureau of Public Buildings and Offices, which comprehends the year 1902, I desire to explain that in so far as has been practicable, I have brought it up to date. Some of the facts and figures embodied herein have been reckoned approximately, but substantially they are correct, and you may accept the statistics here set forth as being, for all practical purposes, final. You will find that I have not made a detailed report of the financial accounts of this Bureau, as that is fully set forth in the yearly report of the General Bookkeeper of the Department of Public Works. So much of the Bookkeeper's statement, however, as is necessary to give you a clear idea of the administrative operations of this Bureau in connection with this report, I have incidentally brought out. Concerning this part of the Bureau's operations I wish to make it clear to you, that, in keeping with your suggestion, toward the latter part of the year, I caused each and every tradesman with whom this Bureau had dealings, to forward to me as speedily as possible bills for the year 1902, so that I could close the accounts, so far as practicable, on the last day of the old year. In most cases this request has been complied with, and the few delayed bills will not materially alter the totals.

As the purchasing agent of the entire Department of Public Works, this Bureau expended during the past year—(you will recall that it was not until the year was well under way that I was given jurisdiction of the supplies accounts of the Bureaus of Highways and Sewers), all told, as near as can be reckoned, \$167,010.23. This amount has been paid out on account of the three bureaus as follows:

Bureau of Public Buildings and Offices—	
Supplies	\$49,995 47
Repairs	52,206 43
Bureau of Highways—	
Supplies	29,754 37
Bureau of Sewers—	
Supplies	35,053 96

The total appropriations for the year of the Bureau of Public Buildings and Offices, subdivided, were as follows:

Salaries and wages.....	\$137,828 00
Transferred to other Bureaus during the year.....	6,500 00
Final appropriation.....	\$131,328 00
Expended 1902.....	130,881 50
Unexpended	\$446 50
Supplies and Repairs—	
Original appropriation.....	\$110,975 00
Transferred to other Bureaus.....	\$15,000 00
Transferred from other accounts.....	10,500 00
Net deduction.....	4,500 00
Final appropriation.....	\$106,475 00
Expended	102,201 90
Unexpended	\$4,273 10
Supplies and Contingencies—	
Appropriation	\$1,000 00
Expended	978 19
Unexpended	\$21 81

For the purpose of an orderly presentation of the facts and figures, I shall treat the subjects of this report under various sub-heads.

PUBLIC BUILDINGS IN CHARGE OF THIS BUREAU.

The following is a statement of the buildings of which this Department has had cognizance and control during the year:

BUILDING.	LOCATION.	LEASED OR OWNED.	DATE OF EXPIRATION OF LEASE.
Borough Hall.....	Fulton, Court and Joralemon streets....	Owned.	
Municipal Building.....	Joralemon street near Court Square....	"	
Kings County Court-house..	Joralemon and Fulton streets	"	
Hall of Records.....	Fulton street and Court Square	"	
Kings County Jail.....	Raymond street.....	"	
Disciplinary Training School	Eighteenth avenue and Fifty-sixth street.	"	
Firemen's Hall, E. D.....	Bedford avenue and North First street..	"	
Administration Building....	East avenue, Wallabout Market.....	"	
Old 9th Prec. Station-house	Gates avenue near Marcy avenue.....	"	
Atheneum Building.....	No. 171 Atlantic avenue (Ct. S. S.).....	Leased.	May 1, 1903
Municipal Courts—			
1st District.....	State and Court streets.....	"	Feb. 1, 1907
2d "	No. 1217 Bedford avenue	"	Nov. 1, 1903
3d "	Lee avenue and Clymer street	Owned.	
4th "	No. 14 Howard avenue.....	Leased.	Feb. 15, 1904
5th " {	Bath avenue and Bay Twenty-second { street	"	June 20, 1902 (No notice of renewal.)
Magistrates' Courts—			
1st District.....	Adams street near Myrtle avenue.....	Owned.	
2d "	Court and Butler streets.....	Leased.	Jan. 1, 1904
3d "	Vanderbilt and Myrtle avenues.....	Owned.	
4th "	No. 8 Lee avenue	"	
5th "	Manhattan avenue and Powers street..	Leased.	May 18, 1902 (No notice of renewal.)
6th "	Reid and Gates avenues.....	"	Jan. 1, 1904
7th "	Grant street and Flatbush avenue.....	Owned.	
8th "	West Eighth street, Coney Island	"	
Five Floating Public Baths—			
No. 1.....	Foot Thirty-ninth street.....	"	
No. 2.....	Foot North First street.....	"	
No. 3.....	Foot Noble street.....	"	
No. 4.....	Foot Conover street.....	"	
No. 5.....	Foot Bridge street.....	"	

BOROUGH HALL.

This building, which was the City Hall of the old City of Brooklyn, was one of the first public buildings erected on this side of the East river, and has called for considerable attention from this Bureau during 1902 in the matter of repairs. The occupants during the year were :

First Floor (Basement) :

Memorial Committee of the Grand Army of the Republic.
Veteran Firemen and Soldiers.
Police of Eighty-second Precinct.
Engine and Boiler-rooms.

Second Floor:

President of the Borough.
Commissioner of Public Works.
Deputy City Clerk.
Members of the Board of Aldermen.
Bureau of Licenses.
Coroners' offices and court-room.

Third Floor:

Court of Special Sessions (now removed).
Law Department.
Keeper's office.
Reporters, Brooklyn newspapers.

Fourth Floor:

Bureau of Buildings.

A vast quantity of work was done in this building because of the discovery that the foundation walls were defective. It was also found that the ceiling of the offices of the City Clerk was badly cracked and that a supporting beam was broken. The arches, I discovered, were loosened and ready to fall, thus creating a very dangerous condition. I had the floor above shored up, took out the defective beam and arches, and replaced them with new. All this was done without interfering with the work of the occupants of the building, and that portion of the structure is to-day in a good condition. The brickwork of the boilers in the building was overhauled and a very bad

state of affairs was revealed. The fact was developed that the top arches and the sides and centre walls surrounding the boilers were defective and must be removed, and that it was advisable to remove all the brickwork surrounding the two boilers because of the likelihood of it collapsing at any time. The expense consequent upon these operations could not, without grave danger, have been avoided. At the beginning the contractors started to take down the brickwork of the boilers, intending to repair them in keeping with orders of this Bureau, and only then discovered that a very inferior piece of work in connection with the original installation of the boilers had been done when they were installed more than twenty-six years ago. As the contractors went along, the facts developed that the braces holding the cast iron fronts had become loosened, thereby permitting them to fall outward about 6 inches, and that the pipe connection of the water arches to the boilers were all the support they had. Furthermore, it was found that between the haunches in the centre and the arches of the outside wall the space had been filled in with refuse and boulder stones, which were not bound together with brick and mortar, and the construction was therefore very faulty—I may say dangerous. This condition warranted the immediate demolition of the entire masonwork of the boilers, except a portion of the foundation, and then the fact was disclosed that the brick party wall crossing about the centre of the two boilers—the wall which carries the floor beams of the various floors of the building—was supported by a 20-inch by 20-inch brick pier, resting on the 20-inch division wall between the two fire boxes and the boilers as a foundation. The brick party wall and the division wall were both found to be burned through and ready to crumble, the floor arches being badly cracked and the upper walls settled. The matter was quickly brought to the attention of the Bureau of Buildings, and Superintendent Calder personally took it in hand. He caused an examination to be made, and under date of July 19, 1902, issued a formal order to shore up the walls, set the boilers and place an iron girder

over them, thus doing away with the brick pier between the boilers and permitting the girder to rest on a brick party wall at one end and a cast iron column at the other. In taking out the ceiling arches, after the shoring had been done, it was found that the space between the top of the arches and the floors—a space of about 5 feet—was filled with dirt and stone similar to that between the haunches of the arches of the boilers. After this had been removed, and the arches and walls made good, it became necessary to repair the plastering and to make good all work disturbed by the removal of the unsafe walls and arches. This work was done as cheaply as it was possible to do it. All old brick suitable was cleaned and used again, and the strictest inspection was made of the contractors' operations. The windows of the boiler-room were enlarged and a coal platform was built, thereby obviating the necessity of carrying the coal across the sidewalks and through the halls and avoiding much dirt and general nuisance in the delivery of coal. The floor beams supporting the floor of the old Aldermanic chamber were later on found to be badly defective, and on an order of the Bureau of Buildings it became mandatory on this Bureau to shore up the floor, pending necessary repairs and alterations. This matter is now in the hands of Architect Axel S. Hedman, who is preparing plans and specifications for placing this portion of the building in a good condition.

Room 14 was fitted up early in the year for the occupancy of the Commissioner of Public Works, with a small annex for the use of the Commissioner's stenographers. Adjacent offices were also fitted up for the Supervisor of Complaints. The platform, bench, rails, desks and other furniture have been transferred from the rooms occupied during most of the year by the Court of Special Sessions and placed in proper position in the Atheneum Building, No. 171 Atlantic avenue, which has been rented for that judicial chamber. In the rooms of the exempt firemen, in the basement, new sanitary plumbing has been installed in place of the old obsolete and unsanitary

system previously in use. The building has been generally kept in good repair and all requirements of painting, plastering, plumbing, roofing and other necessary work promptly attended to. This building will soon be in a good condition.

MUNICIPAL BUILDING.

This building was occupied during the year as follows:

Basement:

Engine and Boiler-room.

Carpenter shop.

Storeroom.

Department of Finance (Tax Bureau).

Department of Water Supply, Gas and Electricity (Registrar Water Rates).

First Floor:

Department of Finance (Bureau of Collection of Assessments and Arrears).

Department of Finance (Deputy Receiver of Taxes).

Department of Water Supply (Water Registrar).

Second Floor:

Bureau of Highways.

Department of Taxes and Assessments.

Third Floor:

Bureau of Public Buildings and Offices.

Department of Street Cleaning.

Bureau of Highways.

Department of Water Supply, Gas and Electricity.

Headquarters Second Brigade.

Fourth Floor:

Department of Water Supply, Gas and Electricity.

Bureau of Sewers.

Bureau of Highways Laboratory.

The offices of the Bureau of Public Buildings and Offices have been altered to suit the requirements of that branch of the newly created borough government. The offices of the Borough Department of Water Supply, Gas and Electricity have been altered to meet the desires of the Deputy Commis-

sioner and thoroughly renovated. The office of the Assistant Commissioner of Public Works has also been renovated and such connections made with the offices as were necessary for the good conduct of the public business. Room 51, formerly used as a blue print room, has been fitted up as a chemical laboratory for the Bureau of Highways, and thoroughly equipped with all modern scientific apparatus and supplies.

Numerous complaints have been made concerning the water supply in the closets on the third and fourth floors, and this trouble has been removed by placing a cylindrical tank on the roof which is supplied by a pump in the boiler-room. Partitions have been changed throughout the building to accommodate the occupants of the several offices. The brickwork of the boilers has been placed in a first-class condition. An entirely new five-ply gravel roof is now being placed over the present one of tin, and the general condition of the building is that of thorough repair and fitness.

KINGS COUNTY COURT-HOUSE.

The court-house was occupied during the year, as follows:

Basement:

Boiler and engine-room.
Storerooms.

First Floor:

District Attorney.
Commissioner of Jurors.
Sheriff.
Grand Jury.
Newspaper Reporters.
Janitor's office.
City Chamberlain.
County Court.

Second Floor:

Supreme Court (various branches including Appellate Division).
Law Library.

Third Floor:

Jury rooms.

Janitor's apartments.

Offices, Stenographers, Supreme Court.

The roof of this building has been overhauled and thoroughly repaired. The ventilation of the water-closets was found to be inadequate and windows have been placed where necessary. The boilers have been reset with entirely new brickwork, the old having been found to be greatly worn and unstable. The steam pipes, which were formerly laid between the floors of the building, are now, as far as possible, placed in a duct, thus obviating the necessity of tearing up the floors, brick walls, etc., in case of need of repairs, to get at them when the occasion requires it. Alterations have been made on requisition of the Justices, and small repairs, including carpenter, mason, painting, electrical and other mechanical work, have been made as the occasion arose. The building is now in a good condition.

HALL OF RECORDS.

The occupants of the Hall of Records during the year were:

Basement:

Engine and Boiler-room.

Storerooms.

County Clerk's Copyists.

First Floor:

County Clerk.

Surrogate.

Second Floor:

Register.

Commissioner of Records.

Third Floor:

Commissioner of Records.

Keeper's apartments.

Accountants.

Only emergent repairs have been made to this building in view of the contract now in force for projected alterations and additions. Under a separate head, you will observe, I have called attention to the changes which are going on in this building, and the facts in connection with which I have endeavored to make clear further on in this report.

KINGS COUNTY JAIL.

This building, despite its age, is now in a fairly good condition. The steam heating plant of this building, when I took charge of this Bureau, I found had been laid on the old method, under the concrete pavement, and experience had shown that repairs to pipes under these conditions were very expensive. Therefore I had a duct built to convey the pipes to their proper destination without the difficulty before experienced in locating any leak. This duct also materially contributes to the preservation of the plant. The pavement is now no longer subject to frequent breaks, and altogether a saving of 100 per cent. has been effected in this connection. The boilers have been reset in the most approved manner, and they are now regarded safe and efficient. In this matter it was found necessary to lower the pump and construct a pit for it. The repairs to plumbing in this building have always been a matter of considerable expense. The class of persons who become inmates no doubt contribute, by their natural negligence, to this condition, and it can only be by the strictest regulation in this relation that the expense of this item can be reduced. The regular usual minor repairs have been made, as the circumstances demanded it. The greatest expense attached to this building is in the matter of plumbing, and I really believe that it would be a great saving to the City if we could employ a practical plumber and station him continually at the jail to attend to its needs along the lines of his trade.

FREE FLOATING BATHS.

The five free floating baths of this borough, which are under the charge of this Bureau, were opened on June 30 last year and closed September 14. They were towed to their winter quarters at the foot of Thirty-second street the day following their closing, where they were placed in position to resist the effect of tide and weather until the reopening of the bathing season next summer. Before again placing them in commission I shall have each one thoroughly overhauled. Until this year these buildings have always been insured, but the present Board of Estimate and Apportionment, having determined to carry no insurance on public buildings, an extra safeguard for these structures was adopted in the employment of an enlarged force of winter attendants. Two bath attendants are constantly on duty night and day during the winter months to see that the bath buildings and their equipment, which cost about \$15,000 each, are not molested. One of these baths, I might say incidentally, has been condemned and may have to be replaced with a new one next year.

During the attempted berthing of Bath No. 1, this summer, a heavy storm struck it and swamped both the superstructure and the pontoons. By quick work six of the pontoons were prevented from sinking, and by promptly calling in the aid of the Merritt & Chapman Wrecking Company the bath was saved at the comparatively nominal cost of \$40. All the other floating structures were berthed without more than the ordinary expense.

Last summer was one of the largest, in point of patronage, that the Brooklyn river baths has ever known. During the less than three months of the year that these baths were in operation, nearly one million bathers were accommodated. During the last week that they were in commission, over ten thousand bathers were recorded. If the weather had been warm during the season the number of bathers would certainly have increased 50 per cent. While there was found some

trouble last summer in securing berths for these baths, owing largely to objections by the Board of Health on sanitary grounds, five berths were finally secured and the baths opened. Each of these structures was thoroughly overhauled just before being placed in commission under a contract with N. B. Smythe.

During the summer each bath was equipped with a swimming apparatus for the instruction of novices by Augustus Sundstrom, former champion swimmer of the world and the present swimming teacher of the Board of Education. I extended permission to Mr. Sundstrom to effect his equipment in the Brooklyn baths and they were equipped in this respect similar to those in Manhattan. Mr. Sundstrom installed the apparatus, which is an idea of his own, under the supervision of the Board of Education. It consisted of a canvas belt large enough to encircle a human body, suspended from the roof of the bath directly over the swimming pool. The belt rested about one foot above the surface of the water. Pupils were outstretched in the belt and were thus taught the proper motions. Mr. Sundstrom was at the different baths on different days to instruct the patrons.

DISCIPLINARY TRAINING SCHOOL FOR BOYS.

This institution is managed by a Board of Directors appointed by the Mayor. A separate appropriation is made for its maintenance, so far as the feeding, clothing, tuition of the boys, payment of help and purchase of supplies is concerned. The maintenance of the buildings—keeping them in repair and heating—is the duty of this Bureau. The building was shown to be inadequate for the proper accommodations of the inmates, and it became absolutely necessary, during the year, for this Bureau to improve its surroundings by furnishing it with more sleeping space. This was accomplished by converting a laboratory on the second floor into a dormitory, thereby adding accommodations for thirty more beds. The

ordinary repairs have been made as they became necessary, and the buildings—there are two buildings connected with the institution—have been kept in first-class condition. I found considerable difficulty during the trouble in the coal market in obtaining coal for this building. It is located at such a far distant point from the business centres of the borough that in these strenuous times with coal dealers there was found a general indisposition to haul coal to it. I succeeded, however, by an arrangement with a comparatively near-by dealer, in supplying the wants of the institution during the cold weather period of 1902.

FIREMEN'S HALL, E. D.

Firemen's Hall, E. D., was formerly a part of the old Forty-seventh Regiment Armory, and as it now stands was allotted to the Exempt Firemen of the Eastern District a number of years ago by the Common Council of the old City of Brooklyn. I have had a few minor repairs made to the building during the year. Its average charge on The City of New York is about \$250 per annum.

ADMINISTRATION BUILDING, WALLABOUT MARKET.

This building was presented to the City of Brooklyn by Mr. Alfred T. White, former Commissioner of City Works of the old City of Brooklyn. Since then the structure, being comparatively new, has cost the municipality but little outside of the necessary care and cleaning. During the past year it was painted and renovated for the first time, and is now a valuable asset of the City. This building is situated in a prominent part of Wallabout Market, and is used jointly by employees of this Bureau who are in charge of the cleaning of the market streets, and employees of the Department of Finance. The cleaning of the streets of the market I thought advisable to bring to your attention under a separate head and is treated later on in this report.

DISTRICT COURT BUILDINGS.

Every district court building in this borough was thoroughly renovated by this Bureau, or by the various landlords thereof at the instance of this Bureau, during the past few months. Thorough inspections of every one of these buildings were made by my inspectors, whose reports were materially helped along by communications from the various Judges, whom I had solicited to indicate to me just in what direction I could improve their surroundings. Some of these buildings required a great deal of care and attention. Those owned by the municipality were placed in first-class condition from top to bottom by this Bureau. The leased buildings, on notice from me, were repaired and improved by the owners, so far as it was possible by the terms of their lease to have them do so, the City assuming the expense of such repairs as the landlords were not called on to make.

The sidewalks in front of every district court building in the borough, as well as of the other public buildings, by your orders and on memorandum from this Bureau, were thoroughly repaired by the Bureau of Highways.

CITY MAGISTRATES' COURTS.

The First, Third, Fourth, Seventh and Eighth District Court buildings are owned by the City, and the Second, Fifth and Sixth are leased.

At the First District Court the plastering was repaired and the courtroom, Judge's and Clerk's offices renovated. It was found necessary to place a new tin roof on the building, and the structure may now be considered to be in good condition.

At the Second District Court some few alterations were made by this Bureau, but on notice from me the owner of the building placed the structure in a condition satisfactory to the Justice.

The Third District Court, which is located in a building owned by the City at Myrtle and Vanderbilt avenues, received

considerable attention from this Bureau in the matter of repairs during the year. The cells and corridors were thoroughly renovated, the furniture cleaned and repaired, and many things done to keep the courtroom in first-class condition.

The Fourth District Court, which, jointly with the Third District Municipal Court, occupies a building owned by the City at Lee avenue and Clymer street, received more or less attention at the hands of this Bureau during the year 1902. The front of this building was pointed up and the interior thoroughly repaired and renovated. A new skylight was placed on the roof.

The Fifth District Court occupies a leased building at Manhattan avenue and Powers street. The courtroom has been thoroughly placed in order by this Bureau, and its furniture, etc., repaired throughout.

The Sixth District Court, which occupies leased quarters at Reid and Gates avenues, was greatly improved in the matter of surroundings by the placing of partitions in the courtroom to make more room for the court clerks, and the interior was entirely repainted. The lessor, at my request, made a large number of necessary repairs.

The Seventh District Court, Grant street, Flatbush, which is quartered in a building owned by the City, was furnished with an additional water-closet, and the old plaster ceiling, which was found to be in a very bad condition, was replaced with a metal ceiling by this Bureau. I also had the lighting appliance in this building greatly improved.

The Eighth District Court, which is situated at Coney Island in a building owned by the City, and which jointly with a police station-house has possession of the premises, received all necessary attention from this Bureau. The repairs to this building during the year have been merely nominal.

MUNICIPAL COURTS.

At the First District Court, situated at State and Court streets, a leased building, the City is not called on to make repairs, but is obliged to provide any special accommodations needed by the Justice. In the latter connection, the calls upon this Bureau during the year were of no moment.

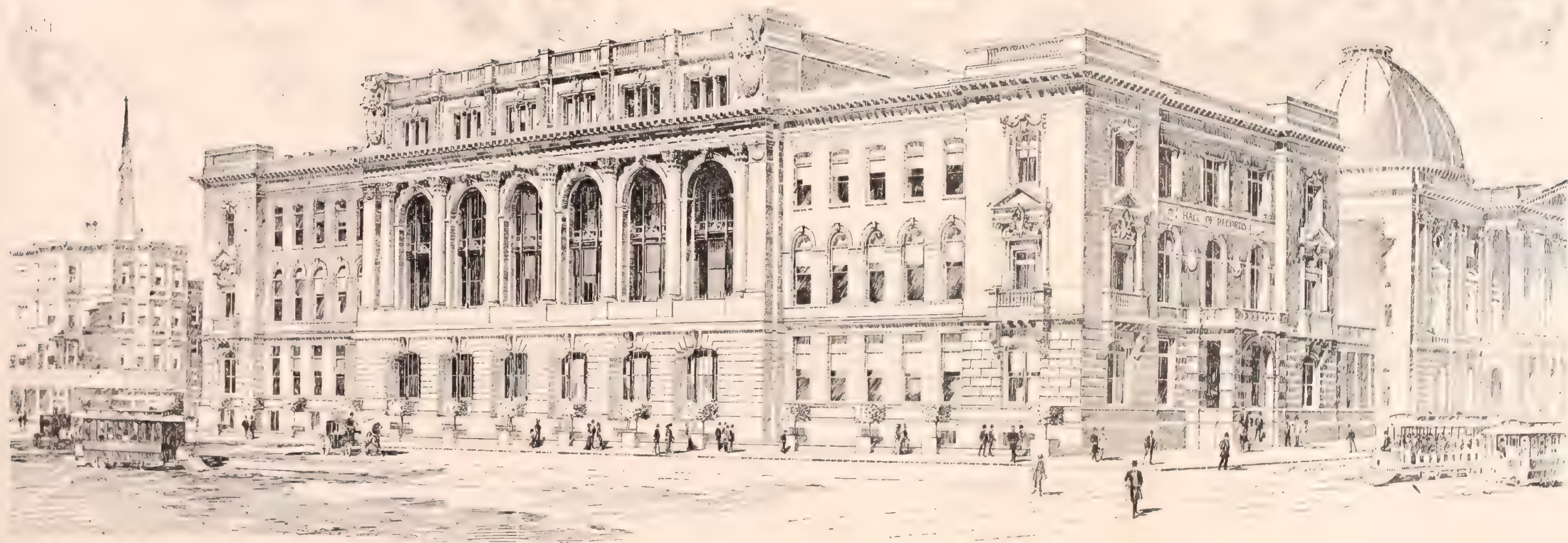
The Second District Court, which occupies the second floor of the building known as Avon Hall, at No. 1217 Bedford avenue, received considerable attention from this Bureau during the year. This courtroom was removed from very undesirable quarters on Broadway to its present location, and at the time of the removal I had the Avon Hall quarters placed in condition suitable for court purposes. That portion of the building used by the court was fitted with the proper accommodations, and is now very comfortably equipped for the transaction of its business.

The Fourth District Court, at No. 14 Howard avenue, a leased building, was considerably improved by this Bureau during the year. The furniture was repaired as occasion demanded. The lessor, under the terms of his lease, renovated the walls, and the appearance of the court is now very satisfactory.

The Fifth District Court, which is located in a leased building at Bay Twenty-second street and Bath avenue, was provided with storm doors and minor repairs.

IMPROVED KINGS COUNTY HALL OF RECORDS.

This building, which is situated at the intersection of Fulton street and Court square, the property extending back to Livingston street, will ere long be one of the most perfect public buildings in Greater New York. Improvements, for the cost of which the Legislature in 1900 authorized an appropriation of \$500,000, are now under way. There was seemingly considerable delay in carrying this project into execution, and immediately after I assumed the reins of office I set about



NEW HALL OF RECORDS, KINGS COUNTY.

bringing the matter to a realization. Architect R. L. Daus was selected by the previous administration in an architectural competition to carry on the work. I notified Mr. Daus, shortly after my appointment, that it was desirable to push the project as rapidly as possible, and he was guided accordingly. In September, this year, estimates in connection with a contract for the work, under the direction of Mr. Daus, was advertised in the "City Record." There were a number of bidders, the lowest being Mr. Thomas Dwyer, of No. 160 Fifth avenue, Manhattan. Mr. Dwyer's bid was considerably less than the total amount of the appropriation authorized by the Legislature. He submitted good evidence of his ability to carry on the work at his figure, and inquiry developed the fact that he had handled many large contracts. His responsibility was vouched for by prominent Manhattan architects. I found that he had erected the east wing and extension to the Metropolitan Museum of Art, which involved an outlay of \$800,000; the Soldiers and Sailors' Monument, at Eighty-ninth street and Riverside Drive, Manhattan, which cost \$200,000; a public school at Ninety-third street and Amsterdam avenue, Manhattan, costing \$190,000.

The improvements to this building meditate some very much needed changes in the present structure, and the erection of an additional section, which will carry the building along the Court square lot, at the rear of and nearly the full width of the present structure, clear through to the Livingston street building line. Already the cellar excavation is nearly completed, and, as the weather permits, concrete is being put in for the foundation of the extension. The shoring for the removal of the Court square front is also under way. The reinforcing piers on the west side of the old building are partly built, and the reinforcing piers in the cellar are pretty much all up. So fast as the weather will allow, the work is going along rapidly.

The present Hall of Records was erected at the corner of Fulton street and Court square in 1885, when Brooklyn's popu-

lation numbered less than 700,000. Since then the number of people in this community has increased over 85 per cent., and the area of the former city, though only a borough now, is four times as large as when the building was erected eighteen years ago. With time the county and municipal records have grown in numbers and volume, but the primitive accommodations for them have remained unchanged. The officials having them in charge have for years been handicapped for room for record storage purposes, and this situation finally reached a condition to excite alarm. The records on file in the office of the County Clerk, Register, Surrogate and Commissioner of Records have been unsatisfactorily arranged, by reason of lack of room, and poorly protected in case of fire. The legislative appropriation of \$500,000 for changes in this building, in addition to providing additional room, comprehends the installation of proper fireproof cases for the protection of the records.

The present building is a two-story-and-attic structure, with a frontage of 150 feet on Fulton street and 200 feet on Court square. The unoccupied lot in the rear of the building is 120 feet on Court square and 96 feet on Livingston street. It is now intended to cover the entire site and at the same time to change the present building so as to make the entire structure, new and old, a four-story building, 320 feet long on Court square. As will be seen from the cut herewith, showing the building as it will appear when completed, it will be a monumental structure, the new parts being in direct keeping with the architectural treatment of the existing building, which, of course, formed the key note of the entire composition. The building, when completed, will accommodate the Surrogate on the first floor along the entire Court square front, while on the other side of the hall the County Clerk will have full sway. The entire second story, with the exception of the Surrogate's court and the adjoining judges' chamber, will be at the disposal of the Register. The Commissioner of Records and his numerous staff will take possession of the third floor, while the fourth floor will be set aside for the quarters of the Register's copyists.

The material of the front will be of Indiana limestone and the entire edifice will be strictly fireproof. The plumbing, now antiquated, will be replaced by plumbing of a modern sanitary character, and a complete system of ventilation of most approved type will be introduced.

INTERIOR PUBLIC BATHS.

The practical construction of Brooklyn's first interior public baths is now well under way. The realization of these projects was made possible by three appropriations by the Board of Estimate and Apportionment of all told \$153,000. Two of the most densely settled sections of the borough will be benefited by these institutions. The sites were selected only after a thorough investigation by myself and a public-spirited representative of some of the leading charitable organizations of this borough. Both sites, shortly after this investigation, were purchased by the City. One site is on the west side of Hicks street, two hundred odd feet north of Degraw street, and the other on the south side of Pitkin avenue, 75 feet west of Watkins street, adjoining the Hebrew Educational Institute. Both sections of Brooklyn selected for these first two interior public baths have always been practically without public baths of any description. The Mothers' Club of Public School No. 29, at Columbia and Amity streets, warmly agitated the establishment of an interior bath in the South Brooklyn section, and at various meetings of that organization house conditions and lack of bathing facilities were talked over, and an earnest plea made for a bath in that vicinity. It was shown at some of these meetings that many of the poorer residents of South Brooklyn were obliged to go to a bath in lower Manhattan for the needed facilities, at a cost of about 40 cents each time. While the Brownsville section may not have seemed so congested, the fact that the two or three story houses there were found to be occupied by many families, most of them working under what might be termed "sweat shop" conditions, com-

bined with the lack of proper sanitary facilities, made the need of that neighborhood pressing.

It was originally planned to erect five baths of this character in this borough, but sufficient money for the purpose could not be obtained this year. My consultations with Borough President Swanstrom and yourself on this subject leads me to believe that the Board of Estimate and Apportionment will give us in 1903 a sum sufficient to erect three more Brooklyn interior baths. In that event, it is my opinion that they should be located respectively in the old Brooklyn section, Concord street to the river in the neighborhood of Bridge and intersecting streets; the section crossed by Manhattan avenue, in the Sixteenth Ward, where the population is congested and conditions are more like the east side Manhattan, and in the section known as Greenpoint, which is, in part, a thickly settled population, with many factories and a large number of children growing up in Public Schools Nos. 59, 34 and 32. Those who have given years of effort in the public schools, in the Astral settlement on Java street, and in the playground maintained in that locality for several years, have testified to the Greenpoint section's needs.

For the baths which are being erected on the two sites purchased, Architects Axel S. Hedman and Louis H. Voss have been selected. The designs were, of course, approved by the Municipal Art Commission. The Hicks street bath, which is to cost \$54,564, the contractors for which are Messrs. W. & T. Lamb, is to be built upon a lot 35 feet 8 inches by 97 feet 6 inches, and will contain two stories and a cellar. The capacity of the building will be 56 showers, 8 bathrooms and toilet-rooms, etc. The exterior of the building will be simple and attractive, and made of limestone and granite. The interior floors will be of white marble terrazzo, and the outer partitions will be of polished marble. The inner partitions of each compartment will be of Virginia soapstone. The building will be fireproof throughout. The plumbing will be plain and of substantial make. The heating will be what is tech-

PUBLIC INTERIOR BATH
W. 2 HICKS ST. BET. DEGRAW + HARRISON STS
BOROUGH OF BROOKLYN.



AXEL S. HEDMAN
ARCHITECT
ARBUCKLE BROS. & CO. BROS. & CO.

THE HICKS STREET BATH.

nically called direct, with some little indirect, and will comprehend a complete exhaust system. On the first floor there will be located for men 14 showers, 2 bathtubs and toilet-rooms. On the same floors there will be placed 15 showers, 2 bath-rooms and toilet-rooms for women. On the second floor, which will be set aside for the accommodation of young men and boys, there will be 27 showers, toilet-rooms and 2 bath-rooms. On the first floor proper waiting-rooms have been provided, and the general layout of the interior arrangement is such that a minimum number of attendants will be required to operate the building.

The plans for the Pitkin avenue bath call for a two-and-one-half-story building, to occupy a plot 50 feet by 100 feet. This building is to cost \$79,300. The contractors are Messrs. Fuller & O'Connor. The first story will cover the entire plot. The second story will be 50 feet 6 inches in depth. The first story will contain 52 showers and 5 tub baths, 26 of the shower baths being for men and 26 for women, with ample toilet accommodations for both sexes. All of the above will be located on the rear portion of the first floor. The front portion of this floor will be devoted to men's and women's waiting-rooms. The second story will contain 38 shower baths and 1 bathtub, with toilet accommodations for youths and boys. Over the first and second floors will be constructed large skylights, which will insure ample light and will also be used for ventilation in the summer time, in connection with an exhaust fan system located on the roof. The building will be fireproof throughout, concrete arches supported on steel beams for the floors and roof being used. The finished floors will be laid with light-colored terrazzo, and the roofs will be finished with slag. There will be a cellar under the front portion of the building, to contain the blower system, hot-water heating tanks, pumps, etc., leaving sufficient room for the construction of a lighting plant at a future day. Under the sidewalk will be located a vault to contain the boilers for furnishing the heat and power, and room for the storage of coal. The stalls

inclosing the shower baths and connecting the dressing-rooms will be constructed of Virginia soapstone and will be covered with roofs of wire glass. The shower fixtures in the stalls will be of the most approved pattern, and the mixing chambers of each individual are to have anti-scalding attachments, so that water cannot be admitted through the showers above a certain temperature, to be regulated to suit. The drainage of the showers will be emptied into gutters located in the rear of the stalls. The gutters will be covered with detachable perforated iron covers, which will greatly facilitate the cleaning of the stalls and prevent the stoppage of the drain pipes by becoming clogged with lint or other foreign matter. The interior of the building will be finished with hard patent plaster and the interior trim will be of hard wood. The stairs will be of iron and stone treads. The front of the building is designed on colonial lines with sufficient ornamentation, in keeping with the style. The front will be of Harvard brick, laid in white mortar, with sufficient limestone trimmings to produce an artistic effect, and the cornice will be of copper. The front doors and windows will be glazed with plate glass. The building will be amply lighted by electric lights. Steam will be furnished by two high-pressure safety water-tube boilers, located in the vault under the sidewalk. From these boilers the steam will be distributed through wrought iron pipes to the various fixtures required for the heating and ventilating of the building, for providing warm water for the baths, running the pumps, etc.

The water for both of these baths will be heated in large horizontal feed water heaters which will be connected with the steam pipes from the boilers. The steam connections to these heaters will be provided with automatic thermostatic valves, so arranged that when the water in the tanks is heated to a proper temperature for bathing purposes the steam supply will be automatically closed. To prevent the possibility of the water temperature rising to the scalding point a second thermostat valve in each building will be provided in the hot water

supply pipes. These thermostats will be set a few degrees higher than the ones in the tanks, but below the scalding point, and in case the thermostats in the tanks fail to work or get out of order, the rise in the temperature will automatically operate the second thermostatic valves and close the main steam supply. A supply of fresh air will be furnished to all the bathrooms and waiting-rooms by electrically driven fans located in the basement. The air, before entering the rooms, will pass over a cheesecloth filter, which will remove all dust, and then over a series of steam coils, which will heat the air to the proper temperature. Exhaust ventilation will be provided for the waiting-rooms and for each individual bathroom, the arrangement of the baths being such that the fresh air will be drawn into each room or stall under the door, and after passing through the dressing-rooms and bathrooms, passing out through the registers located near the ceiling line of the bathrooms. The exhaust ventilating flues will be connected with large exhaust fans located in fan-houses on the roofs of the buildings. The action of the supply and exhaust fans provides for a constant flow of fresh air through the buildings, whatever the outside atmospheric conditions may be. Each large bathroom and waiting-room will be provided with ample steam radiators to heat the rooms to a comfortable temperature at all times. It is estimated that there will be maximum accommodations in these baths for about four thousand persons per day.

I might say in connection with these baths that the work on the Hicks street institution has advanced to that stage where the contractors are ready to place the first tier of beams in position. The contractor for the Pitkin avenue bath has been ordered to begin work, and he has already started the excavation and undertaken the brickwork of the rear and east walls.

PUBLIC COMFORT STATIONS.

Of the six projected public comfort stations for this borough, for the construction of which three appropriations, aggregating \$128,000, have been made by the Board of Esti-

mate and Apportionment, three have been actually contracted for. Contracts for the other three have been advertised, and these stations will probably be opened to the public soon after the first three have been placed in readiness. These six stations will be located respectively as follows:

At the junction of Fulton street and Joralemon street.
Intersection of Pulaski street, Broadway and Reid avenue.

Intersection of Broadway, Throop avenue and Lorimer street.

Hamilton avenue and Richards street.

Liberty avenue and East New York avenue.

Manhattan avenue and Greenpoint avenue.

Work upon the three stations for which contracts have been awarded will be started as soon as the weather conditions will permit. The contractor for the station at Throop avenue and Broadway is Thomas Dwyer, whose bid was \$23,000. Mr. Dwyer is also the contractor for the station to be located at Fulton street and Joralemon street, his bid having been \$23,000, and T. J. Carlin, whose bid was \$22,950, is the contractor for the station at the intersection of Pulaski street and Broadway. Bids in connection with the other three stations will be opened on January 21. Of these six stations, four will be in the form of an equilateral triangle, each of the sides being 60 feet in length and 8 feet in height, in the clear. The other two will be rectangular in shape, approximately 80 feet long, 18 feet wide and 8 feet high, in the clear. In general, all of these structures will be divided into two compartments, one for women and one for men. Each compartment will contain the necessary toilets and wash basins. A portion of these toilets are to be constructed with small rooms fitted up with the most approved plumbing, including separate wash bowls, and will be supplied with looking-glasses, towels, soap, etc. All the structures, with the exception of the doors, are to be of steel and masonry construction. The interiors will consist mainly of marble and enameled brick. The ceilings will have a Keen cement finish. The floors will be of kosmo-concrete. All painted work will be enameled with the view to

cleanliness, it being known from experience that these stations, to be a success, must be kept clean, and where the paint is washable a hose can be turned on all parts as often as it is desired and a thorough washing given. Light in the daytime will be obtained by means of patent vault lights, and at night electricity will be used for illuminating purposes. The stations will be heated and ventilated by means of fresh air drawn through hot water coils by electric fans and then forced through flues and registers into the two compartments into which the stations are to be divided. The foul air will be exhausted by additional electric fans, through registers placed in each toilet, and then through flues to the outside air. By this means the air will be changed almost every ten minutes. Separate staircases will be provided for each sex. Each compartment will have a small room or office for the use of the attendant in charge.

PROJECTED DISTRICT COURT-HOUSE.

Assurances that an appropriation of \$50,000 for the construction of a new district court-house, to accommodate the Second District Municipal Court and the Sixth District Magistrate's Court, both of which are now located in leased buildings, on the site of the old Ninth Precinct Police Station-house, on Gates avenue, near Marcy avenue, warranted me toward the close of the year in taking steps to have the project in condition for an advertised contract. A building of this character was found necessary many years ago, and several fruitless attempts were made to realize it. The site is owned by the City and has been idle ever since the Gates avenue police squad vacated the building over eight years ago.

In 1896 the old Brooklyn Board of Estimate appropriated, for use in 1897, the sum of \$15,000 for making alterations and repairs to this building to suit it for court purposes. On March 11, 1897, orders were received from the then City Works Commissioner of Brooklyn to prepare plans and speci-

fications for estimates for advertising this work. Proposals were received July 6, 1897. The lowest estimate exceeded the appropriation by \$8,742. Orders to modify the plans, if possible, to cover an expenditure within the appropriation, were issued. This it was found impossible to do along the lines of good workmanship. On July 12, 1897, orders to readvertise for bids in the name of the Commissioner of City Works, on a modified plan, were issued. This was done and five estimates were received. These estimates again exceeded the amount of the appropriation. The Commissioner of City Works then applied to the Common Council for a transfer of \$7,000 on unexpended balances to the account of altering the old Ninth Precinct Station-house. This resolution was passed, but whether or not the amount was ever set aside by the Comptroller does not appear. On August 24, 1897, orders were issued to make a contract in the name of the Commissioner of City Works with M. Gibbons & Sons, at the price set forth in their estimate of July 26, 1897, for the sum of \$21,875. This contract was signed by M. Gibbons & Sons, their sureties, the Deputy Commissioner of City Works and the Mayor, and attested by the City Clerk. It was forwarded to the Comptroller for certification, but, so far as can be learned, was never certified, and the building was never remodeled. Yet M. Gibbons & Sons undertook to carry out the improvements, but were shortly afterward stopped in their operations, and no work whatever has been done on the building since. This was the condition of affairs concerning this building when I took charge of the Bureau of Public Buildings and Offices. I was given to understand that the previous administration had made several attempts to secure an appropriation to place this building in condition for court purposes, but all such efforts seem to have been unavailing. The two courts which it is intended to house in this structure are now in leased buildings which cost the city an annual rental of \$3,150. I found the location peculiarly suited for the purposes in mind, as the districts of



PERSPECTIVE
PROPOSED GATES AVE. COURT HOUSE.

both courts which it is intended to place therein are geographically comprehended by the site.

In response to advertisements calling for an open competition for architects for plans for this district court building, which I caused to be inserted in all of the Brooklyn papers toward the latter part of the year, I received inquiries and promises to compete from a large number of local architects. I arranged then that each architect desiring to take part in the competition should present to me drawings of a building, suitable for the purpose, on a scale of $\frac{1}{8}$ inch to the foot, in India ink, and mounted without frames. I provided that a sealed letter, marked on the outside with some individual device or motto for purpose of identification, and containing the name of the competing architect within, was to be forwarded to my office with a plan; that the typewritten description accompanying each plan should bear the same device or motto by which the envelope was marked and which appeared on the plan, and that none of the plans should bear any mark by which their authorship could be known before the competition had been decided. Nine sets of plans were received at my office, and, at my request, Brooklyn Chapter, American Institute of Architects, appointed two members to assist me in determining the most desirable plan. These plans were examined by that committee and myself, we having no knowledge whatever up to the time that our selection was made as to the individual authorship, and a plan submitted under the word "Justitia" was selected. The accompanying envelope, bearing the same word, on being opened, showed the successful plan to be the work of Wilkinson & Magonigle, of Manhattan. The latter firm was notified of the committee's decision. The matter is now in such shape that the contract can be advertised as soon as the anticipated appropriation is forthcoming. The accepted plan for this projected structure will permit the public to reach either of the two courts which will be located in the building in the most direct manner. The Judges are to be provided with a private entrance corridor and staircase, and private

toilets. The court officers will have a private corridor, and a special entrance will be provided for prisoners. An inside flight of stairs leading to the basement will be used by the prisoners to reach the cells. The heating apparatus will be located in the basement. On the ground floor the Magistrate's court will be located, and a rear staircase will conduct the prisoners directly to this tribunal. The administrative rooms will be at the rear of the courtroom, and this courtroom will be lighted from the sides. With the exception of the arrangement of the entrance, both floors will be alike, and each court will have its own vestibule, of a size commensurate with the capacity of the courtrooms. Throughout the treatment of the building will be of the grave and sober character appropriate to its purpose. The façade will be in Indiana limestone.

HEADSTONES FOR VETERANS' GRAVES.

A contract for the headstones for the graves of deceased veteran soldiers and sailors in the cemeteries of Kings and Queens counties, a matter which is under the care of this Bureau, was let in 1902 to Andreas Seiz. The contract called for the making and erection of one hundred stones. This contract was completed and the stones were placed in cemeteries, as follows:

Lutheran	13	Mt. Olivet.....	5
Greenwood	18	Cedar Grove.....	1
St. John's.....	3	Canarsie	3
Calvary	8	Evergreen	16
Woodlawn	2	Holy Cross.....	14
Linden Hill.....	1	Cypress Hills.....	13
National	1		
Locust Grove.....	1		
Flushing	1		
		Total	100

A previous contract for the same purpose which had been entered into by the Department of Public Buildings, Lighting and Supplies, under the old order of affairs, was executed under my supervision in 1902. This contract was with Joseph Bermel, and by its terms he erected similar stones, as follows:

Holy Cross.....	16	Calvary	9
Evergreen	16	Lutheran	15
National	20		
Greenwood	9	Total	100
Cypress Hills.....	15		

This matter is regulated by chapter 225 of the Laws of 1896, providing that the graves of all the deceased soldiers and sailors or marines from Kings County shall be marked by a headstone containing the deceased's name, and, if possible, the organization to which he belonged, or in which he served. These stones, it is provided, shall not cost more than fifteen dollars each. Provision was made last year for expending \$1,500 for this purpose. The contract with Andreas Seiz exhausted that appropriation. In the budget of 1902 an additional provision of \$1,500 is made for the same purpose, and I am now arranging a similar contract. In connection with this matter, I would like to call your attention to the fact that some misapprehension exists. The law specifically provides, as I have shown, that the expense of such headstones are to be a charge upon the county of the deceased's legal residence. Some of these deceased soldiers and sailors from this county were buried in cemeteries outside of Kings County, so that these stones are rightfully placed in cemeteries other than those situated in Kings County. The relatives and friends of deceased soldiers and sailors who live in Queens County, however, seem to have gained the impression that our appropriation can be used to pay for the headstones of their relatives and friends. This, of course, is not so, but it has taken considerable effort on my part to make it understood. We, of course, provide these headstones, so far as the graves of Queens County is concerned, only for the graves of veterans who lived in Kings County, but who are buried in Queens County.

BROOKLYN THEATRE PLOT IN GREENWOOD CEMETERY.

The care of the plot in Greenwood Cemetery, in which are interred the remains of the unidentified dead of the Brooklyn Theatre fire, was placed in the care of Borough President Swanstrom, last April, by Comptroller Grout, whom, it appears, upon taking up the reins of the Comptroller's office, found that the care of this plot had never been under the supervision of any municipal officer since consolidation, and through the Borough President transferred by you to this Bureau. Fifty dollars per year had been regularly appropriated by the City for keeping this plot in order, but the florist who held the contract seems never since consolidation to have been subject to official scrutiny in this work. I have caused, ever since the plot was placed in my care, a regular inspection of it, so that there is no possibility of it being neglected.

This plot contains the one hundred and one unidentified bodies of the two hundred and ninety-five victims of the Brooklyn Theatre fire, which occurred on December 5, 1876. The plot was bought by the City of Brooklyn. It is on "Battle Hill," only a short distance from the main entrance to the cemetery. The interment was made on Saturday, December 9, 1876, four days after the holocaust, one of the coldest and stormiest days of that winter. It took seventeen hearses and forty-five undertakers' wagons, the latter containing from one to four corpses each, to carry the remains. The bodies were interred in one common grave, a circular trench seven feet deep and thirteen feet wide, surrounding a round sodded space ten feet in diameter, upon which a monument was subsequently erected. The bodies are placed in a double row, the heads all pointing toward the monumental center.

This lot I have just caused to be fertilized for the winter months. As soon as the warm weather approaches the lot will be planted with flowers and the grass cut. It will be kept in proper order throughout the year.

WORKS OF ART IN PUBLIC BUILDINGS.

At the request of the Municipal Art Commission, last August, I caused to be prepared a catalogue of all works of art belonging to the municipality and contained in the various public buildings of Brooklyn. According to the provision of the Charter, under which the Art Commission is working, the term "Work of Art" includes all paintings, mural decorations, stained glass, statues, bas reliefs or other sculptures, monuments, fountains, arches or other structures of a permanent character intended for ornamentation or commemoration. I found that the list of these works in the Brooklyn Public Buildings comprehended a large number of pictures, which the old City of Brooklyn had owned for so long that just how they came into possession of the former municipality was beyond the recollection of the oldest public official. In the Borough Hall alone were found these works of art belonging to the municipality :

Two large oil paintings of George Washington.
 Water color of Washington Market.
 Large oil painting of Henry Clay.

Portraits in oil of these ex-mayors of the City of Brooklyn :

George Hall,	Seth Low,
Alfred M. Wood,	Frederick A. Schroeder,
Samuel Booth,	Charles A. Schieren,
Martin Kalbfleisch,	Henry C. Murphy,
John W. Hunter,	Edward Lambert,
Samuel S. Powell,	Edward Copeland,
Daniel D. Whitney,	Jeremiah Johnson,
James Howell, Jr.,	Conklin Brush,
Samuel Smith,	Thomas Talmadge,
Joseph Sprague,	Cyrus P. Smith,
Francis Stryker,	Jonathan Trotter.

Marble busts of Martin Kalbfleisch and Samuel Powell.

In the Kings County Court-house, inquiry elicited the discovery of oil paintings of former county judges :

Henry A. Moore,
 J. H. Troy,
 John Dikeman.

Portraits of former justices :

Jacob A. Lott,	Alexander McCue,
Calvin E. Pratt,	James Green,
William W. Scrugham,	Joseph W. Gilbert,
James Emott,	Matthew H. Clement,
Joseph F. Bernard,	James W. Brown,
George W. Thompson,	Granville T. Jenks,
George G. Reynolds,	Erastus Cooke,
Joseph Nielson.	

Marble bust of Benjamin D. Silliman.

In the Hall of Records I found portraits of these former surrogates :

Andrew B. Hodges,	Roswell C. Brainard,
Rodman B. Dawson,	Abraham H. Dailey,
William D. Veeder,	Jacob I. Bergen,
Walter L. Livingston,	Abraham Lott,
Jesse C. Smith,	George B. Abbott.

Former chief clerks of the Surrogate's Court :

Judah B. Voorhees,
Joseph W. Carroll.

These historical mementoes of the late City of Brooklyn were properly catalogued and are being given watchful care by this Bureau, but it is my firm conviction that arrangements should be made for their protection within the walls of some historical institution.

WALLABOUT MARKET STREETS.

This Bureau has charge of the cleaning of the streets of Wallabout Market, and in connection therewith, employs a force at that point of one foreman of laborers, three laborers, three cleaners, two drivers and four horses and carts. The problem of keeping clean the streets of this market, which seemed to have gone unsolved for several years by reason of the fact, largely, that the City authorities empowered with the duty, had had no place to deposit the refuse collected, was finally settled during the year '1902. The Street Cleaning

Department has nothing whatever to do with the cleaning of the streets of markets. The Charter places that duty on the Borough Presidents. Last May I perfected arrangements with Superintendent Clark, of the Street Cleaning Department of this borough, to carry off the market sweepings on one of the Street Cleaning Department's scows. Heretofore these sweepings had been gathered by the market force of cleaners and burned on a lot within the market property. A nuisance of some proportions was thus created, and complaints loud and deep had been lodged by business firms, with establishments adjacent thereto. There was necessarily some quantity of vegetable matter included in the sweepings, and the burning of this character of refuse produced a nuisance that was very obnoxious. In keeping with my arrangement with Superintendent Clarke, the market force now gathers the market sweepings in canvas covered trucks and carry them to a Street Cleaning Department scow at the foot of Gold street. I have endeavored to impress upon the minds of the market men the absolute necessity for keeping the vegetable matter and manufacturer's refuse free from the street sweepings. Mr. Clarke's scows will not accept vegetable matter or manufacturer's refuse. All stuff of this character must be gathered separately by the market stand-owners in cans which they themselves must provide for the purpose, and which are emptied by the garbage contractors. I believe now that the market stand-owners appreciate the situation, and they seem to be assisting me so far as lies within their power in keeping out of the streets the sweepings from their stands.

THE COAL PROBLEM.

The public buildings of this borough in charge of this Bureau use, altogether, on an average, 17 tons of coal per day. Early in this administration when the market was in a normal condition we had no trouble in perfecting a contract with the Moquin-Offerman-Heissenbittel Company for a sufficient quantity of coal to fill all requirements almost up to the close of the year, at \$5 per ton, delivered. During the coal

strike, when it was at times almost impossible to obtain coal, the Moquin-Offerman-Heissenbuttel Company was permitted to substitute, in some instances, soft coal for the anthracite coal called for by their contract. Early in December we again advertised for a quantity of coal—640 tons—and not a single response was received in answer to that advertisement. In view thereof we were empowered by the Board of Aldermen to expend \$12,000 in the open market for coal, and under the authority of that resolution I found it necessary to purchase coal to the extent of \$11,320. The price varied from \$7 to \$13.50 per ton. The latter figure was the highest price I found it necessary to pay. Most of this coal was purchased within the figures named, delivered at the various buildings. A portion of it I was obliged to have carted at an additional cost of \$1 per ton. Until the new contract, estimates in connection with which are to be opened this month, has been perfected, we shall be able to get along in the coal relation very well.

CONCERNING BUREAU ORDERS.

The total number of orders issued by this Bureau during the year were two thousand nine hundred and sixty (2,960), of which one thousand eight hundred and twenty-eight (1,828) were for supplies and one thousand one hundred and thirty-two (1,132) for repairs.

While the Charter permits us to purchase goods and order repairs to the extent of less than \$1,000 without contract, I early recognized the advisability of soliciting estimates where practicable in connection with requisitions calling for an expenditure of sums of even less than \$100, and it has been my effort to obtain estimates throughout, wherever practicable, before issuing orders for minor supplies and repairs. Frequently I found it impracticable to obtain estimates, and in cases of that kind the orders were issued outright. I obtained during the year three hundred and twenty-three (323) estimates, of which two hundred and thirty-one (231) were for supplies and ninety-two (92) for repairs. Contract orders issued numbered forty (40). Thirty-five (35) orders for supplies and

fifteen (15) for repairs were canceled. In purchasing coal in the open market, except in rare cases where it was advantageous to buy boatloads, I invariably obtained estimates.

At the outset I made it manifest by distributing the Bureau orders among the various reputable tradesmen and mechanics—direct where the demands warranted it, or as the result of invitations to estimate—whose business cards had been filed here for consideration—largely through your public invitation so to do—that unbusinesslike methods would not obtain, and the varied list of firms and individuals with which the orders of the Bureau have been placed during the past 12 months substantiates the statement that political considerations have not weighed. It was not an infrequent occurrence, however, to receive no response from some of the persons who had particularly requested to be communicated with in this connection. As an evidence of this fact, our records show that out of requests for proposals solicited on an average from 6 firms or persons, only 1 estimate was received in each of 83 cases; only 2 in each of 76 cases; only 3 in each of 41 cases; only 4 in each of 25 cases, and it was a comparatively rare occurrence to receive a figure from each firm or person to whom invitations had been forwarded.

Quite a number of the Bureau orders were precipitated by direct requests for radically improved Bureau surroundings from the officials located in the buildings under my care. I have been in constant touch with all such officials and have twice by letter requested them to suggest repairs that were needed to keep their public quarters in the best possible shape for use. In this way and through inspections by the Bureau's staff, I am frank to say that the condition of the municipal buildings of Brooklyn to-day is better than ever before. I have aimed to get the best returns for the money expended, and in this connection wish to call your attention to the fact that many estimates received for the same proposition—repairs, notably—have varied from 25 to 400 per cent., and the same propositions have even called forth estimates ranging from, for instance, \$160 to \$545, \$18 to \$117, \$170 to \$576, and \$219

to \$500. The advantages to the City in obtaining estimates where practicable is therefore apparent. Invariably where these estimates have not been informal, the orders have gone to the lowest bidders and I have yet to hear the first note of dissatisfaction with this Bureau from bidders who have failed to succeed in these competitions.

SUMMARY STATEMENT OF CONTRACTS.

These contracts on behalf of this Bureau were registered during the year :

TITLE.	CONTRACTOR.	AMOUNT.
Furnishing 1,410 tons of coal (2,240 pounds to a ton).....	Moquin-Offerman-Heissen - } buttel Coal Company.. }	\$6,912 30
Repairing and fitting out five public baths.....	Neptune B. Smythe	3,373 00
Janitor supplies.....	Joseph N. Early	884 94
Furnishing and erecting headstones for graves of deceased veteran soldiers.....	Andreas Seiz.....	1,180 00
Changes and additions, etc., Hall of Records	Thomas Dwyer	398,700 00
Erecting interior public bath (Hicks street).....	W. & T. Lamb.....	54,564 00
Total.....		\$465,614 24

Contracts for Pitkin Avenue Interior Bath and Public Comfort Station were not registered until after the first of the new year.

In closing I take great pleasure in making it known to you that I have been ably assisted in my administration of this Bureau by the Bureau's staff generally, and I am firmly confident that no other branch of the municipal government could have demonstrated a more earnest disposition to serve the interests of the City than has been exhibited by the attachés of the Bureau of Public Buildings and Offices, Borough of Brooklyn, during the year just closed.

Very respectfully yours,

FRANK J. HELMLE,
Superintendent.

TOPOGRAPHICAL BUREAU.

List of merchants from whom supplies were ordered during the year and the amount of obligation incurred with each:

Benoit, A. V.....	Draughting materials.....	\$140 32
Bischof, Geo. J.....	Asst. Engr. in charge.....	173 94
Brandis, F. E., & Sons.....	Draughting materials.....	779 02
Brooklyn Blueprint Works.....	Blue prints.....	9 80
Brooklyn Heights R. R. Co.....	Car fare tickets.....	490 00
Carroll, David F.....	Postal cards.....	6 00
Christiansen, H. B.....	Prints.....	51 69
Coney Island & B'klyn R. R. Co...	Car fare tickets.....	10 00
Keuffel & Esser.....	Drawing materials.....	285 88
Lewis, N. P.....	Chief Engineer.....	43 19
Morris & Selover.....	Oak stakes.....	50 00
Rudolph, A.....	Maps.....	25 05
Soitman, E. G.....	Draughtsmen's supplies....	61 32
Stevenson & Marsters.....	Stationery.....	20 40
Tillson, Geo. W.....	Chief Engineer.....	96 81

BUREAU OF HIGHWAYS.

Statement of moneys paid to the several merchants, together with the estimated value of Department orders for which bills have not yet been rendered:

Allen, Wm. T.....	Livery stable.....	\$238 00
American Can Co.....	Tin cans.....	148 80
Barrett, L. S.....	Horseshoer.....	223 50
Barrett Mfg. Co.....	Paving pitch.....	619 58
Barry, John J.....	Wagon repairs.....	530 00
Bauer, H. C.....	Rent.....	431 94
Benoit, A. V.....	Draughting materials.....	88 00
Bormay & Co.....	Electrotype.....	2 00
Brandis, F. S., Sons & Co.....	Transit and repairs to same.	748 50
Brooklyn Daily Eagle.....	Printing.....	80 00
Brooklyn Citizen.....	Printing.....	17 00
Brooklyn Heights R. R. Co.....	Cars and car fare tickets (17 orders).....	1,690 00
Brooklyn Lumber Co.....	Lumber.....	82 50
Brown, J. K., & Co.....	Ladders.....	14 00
Buckley, John W.....	Boots.....	51 50
Bulwinkle, John M.....	Stationery.....	150 54
Burling, Benj.....	Harness.....	314 20

Burroughs, Wm. V.....	Cement	\$82 00
Butler, M. J.....	Repairing pipe.....	15 00
Castel, Walter L.....	Contractor	70 00
Carroll, David F.....	Postage stamps.....	62 40
Campbell, M. G.....	Repairing surrey.....	126 00
Champion Cycle Co.....	Bicycles	102 25
Christopher, Thomas A.....	Tools	41 70
Clarke, Audley.....	Cement	48 75
Cobb, Geo. W.....	Desk	70 00
Cohen, Henry.....	Roofer	24 00
Colyer, Jos. A.....	Cement	19 50
Collins, C. V.....	Desks	90 00
Cornell, Samuel W.....	Hardware	81 79
Corr, Thomas.....	Horseshoer	724 50
Cummings, R., Sons.....	Timber	3 00
Department of Correction.....	Brooms	1 63
Devine, Wm.....	Tires	13 00
Disbrow, Lee A.....	Livery stable.....	360 00
Dow, A. W.....	Ph. B.....	160 00
Driscoll, J. W.....	Livery stable.....	96 66
Dunning, Wm.....	Stenographer	31 29
Duryea & Storms.....	Feed	39 69
Early's, John, Sons.....	Stable supplies.....	124 90
Eastern Bermudez Asphalt Co.....	Contractors	695 52
Eddy, Geo. M., & Co.....	Tapes	66 05
Eimer & Amend.....	Laboratory supplies.....	734 54
Empire O. Glass Co.....	Street signs.....	18 02
Espenscheid, N.....	Rent	500 00
Fallon, Martin, Co.....	Plumbing	101 43
Fitzimmons, M.....	Broken stone.....	112 50
Fruin-Bambrick Paving Co.....	Contractors	157 20
Gates, M. S., & Co.....	Rubber hose.....	34 00
Goubeaud, G. J.....	D. V. S.....	123 85
Hanley, Geo. W.....	Rent	541 66
Henjes, Henry.....	Coal	160 00
Herring-Hall-Marvin Safe Co.....	Repairing safes.....	4 00
Hilton & Dodge Lumber Co.....	Lumber	850 00
Hyde, E. Belcher.....	Maps (2 orders).....	1,086 00
Jackson & Cowenhoven.....	Hardware	326 00
Keenan, C. W.....	Oils	12 36
Kuffel & Esser.....	Drawing materials.....	234 42
Kieselbach, H. C.....	Oils, etc.....	31 56
Kornobis, Dr. H. W.....	Horse	225 00
Knowles, J. A.....	Screens	8 00
Kolesch & Co.....	Draughting tools.....	90 50
Laube, Julius, & Co.....	Contractors	7 20

Leopold, J., & Co.....	Granite blocks.....	\$337 92
Lewis, N. P.....	Chief Engineer.....	43 03
Luck, Fred.....	Contractor.....	856 20
Mack Mfg. Co.....	Blocks.....	120 60
Macauley, C. R.....	Glazing.....	25 05
Mahnken, John H., & Co.....	Cement.....	278 75
Matthews, A. D., & Sons.....	Dry goods.....	21 45
Monahan's Express Co.....	Livery stable.....	100 00
Morris & Selover.....	Surveyors' stakes.....	520 00
McBreen, Owen, Mgr.....	Paving gravel.....	533 00
McIntyre, E.....	Postage stamps.....	82 40
McMurray, Robert J., & Bro.....	Ironwork.....	24 80
McKeever, E. J.....	Contractor.....	74 65
McMillain, L. A. & T. A.....	Carpet cleaners.....	11 44
Nassau Uniform Co.....	Badges.....	83 30
National Coal Tar Co.....	Paving pitch.....	51 57
N. Y. & N. J. Telephone Co.....	Coupon books (12 orders)...	1,312 80
O'Brien, H. A., & Co.....	Livery stable.....	62 50
Oastler, W. C.....	Machinery { \$772 50 995 00 950 00 }.....	2,516 50
Person, Orrin D.....	Blocks.....	38 50
Penrhyn Slate Co.....	Slate.....	7 50
Peterson, A., & Son.....	Feed.....	271 20
Platt, Wm. O., Agt.....	Rent.....	625 00
Pollard, Jos. G.....	Tools (13 orders).....	1,269 18
Pope, Wm., Jr.....	Gas fixtures.....	11 34
Powers, P. H., & Son.....	Livery stable.....	50 00
Powers, Peter J.....	Painter.....	76 00
Remsen, I. S., Mfg. Co.....	Stable supplies (7 orders)...	1,068 30
Riehle Bros. Testing Machine Co..	Crushed quartz.....	302 87
Roberts, Geo. H.....	Postmaster.....	68 00
Rowland, J. W., & Son.....	Livery stable.....	125 00
Ryan, Daniel.....	Builder.....	346 00
Ryan, Matthew P.....	Removing incumbrances...	46 75
Ryan, N., Estate of.....	Stone and gravel.....	166 35
Sanborn Map Co.....	Maps.....	110 00
Schock, Albert.....	Bicycle supplies.....	2 00
Scholl, Julian.....	Implements, etc.....	673 00
Scuyler, Jas. D.....	Professional services.....	516 35
Sanford, F. S., Coal Co.....	Coal.....	253 00
Shipman's Sons, Wm. M.....	Feed.....	104 20
Soltman, E. G.....	Drawing materials.....	84 50
Standard Oil Co.....	Gasoline.....	3 40
Stackpole & Bro.....	Draughting material.....	150 00
Stevenson & Marsters.....	Stationery.....	226 00
Stewart, Edw. C.....	Wire spikes.....	2 50

Stone, Wm.....	Removing incumbrances...	\$69 30
Sullivan, J. T.....	Horse	200 00
Topping Bros.....	Claw bars.....	92 81
Vulcanite Paving Co.....	Contractors	94 32
Volkommer & Co.....	Horses	250 00
Webb, John L.....	Stenographer	92 53
Williams, Roger.....	Electric work.....	175 00
Williams & Sons, Geo. A.....	Laboratory supplies.....	83 00
Wilson, C. W.....	Timber	274 60
Wilson, A. T.....	Rubber stamps	1 00
Windsor Stables.....	Livery stable.....	119 00
Whitehall, Tatum & Co.....	Laboratory supplies.....	58 41
Whinery, S.....	Specialist	50 00

List of merchants among whom the business of the Bureau of Sewers has been distributed, showing the amounts of their several transactions. These amounts include moneys actually paid and the value of Department orders given not yet paid:

Abraham & Strauss.....	Dry goods.....	\$153 43
Abrams, Chas. W.....	Salt	71 25
Allen, Wm. F.....	Livery stable.....	232 00
American Can Co.....	Tin cans.....	18 50
Aschenbach, H.....	Harness, etc.....	10 00
Atchinson, Samuel.....	D. V. S.....	10 00
Bader, Louis.....	Livery stable.....	275 00
Barry, David.....	Horseshoes	26 00
Beisswanger, John.....	Wagon repairs.....	3 00
Bell, Harry W.....	Sewer pipe.....	435 65
Benoit, A. V.....	Draughtsman's supplies...	110 80
Blanchard, Frank G.....	Dynamos	242 00
Binns, David W.....	Iron foundry (21 orders)..	1,653 20
Bradt, Rita.....	Typewriting services.....	65 44
Brady, John T.....	Salve	4 50
Brandis, F. E., Sons & Co.....	Surveying instruments....	63 80
Brooklyn Citizen.....	Printers	16 00
Brooklyn Heights R. R. Co.....	Car fare tickets.....	425 00
Brooklyn Lumber Co.....	Lumber	223 13
Brooklyn Union Gas Co.....	Gas	52 56
Brown, Edward.....	Livery stable.....	97 00
Brown, James J.....	Disinfectant	30 00
Brown, Martin B.....	Printers	8 60
Bruerton, Wm.....	Boat hire.....	3 50
Buckley, John W.....	Engineers' supplies.....	12 00
Buffalo Specialty Mfg. Co.....	Metaline	3 00
Bulwinkle, John M.....	Stationer	534 45

SEWERS.

Bureau of Highways.....		\$28 90
Burnell, S. D.....	Surveyors' instruments....	8 80
Burroughs, Wm. V.....	Building material.....	150 01
Borough Wire, Iron and Brass Wks.....		54 50
Campbell, Bernard & Co.....	Cartmen	9 00
Campbell, M. G.....	Carpenter	5 60
Carroll, David F.....	Postmaster	63 60
Christopher, Thomas A.....	Hardware	30 50
Chicago Metaline Lub. Co.....		22 50
Clare, John F.....	Contractor	22 00
Clarke, Peter.....	Coal (authority granted by Board of Aldermen).....	2,100 00
Cocheu, Fred C.....	Refund	78 93
Colligan, John.....	Hardware	91 20
Columbian Foundry.....	Iron castings.....	400 72
Coney Island & B'klyn R. R. Co...	Tickets	10 00
Cook, E. H., & Co.....	Coal	180 00
Cornell, Samuel W.....	Hardware	339 18
Cradock, P. F.....	Feed	122 37
Cranford Co.....	Contractors	3 90
Crookston & Bro.....	Candles	12 65
Cross, Austin Ireland, Lumber Co..	Lumber	311 92
Cunningham, John V.....		1,523 90
Curtis Bros. Lumber Co.....	Lumber	63 80
Danforth, Wm. H.....	Metal polish.....	3 00
Davidson, M. T.....	Engine supplies.....	59 30
Deane Steam Pump Co.....	Supplies	16 15
Department of Police.....	Boiler inspection.....	20 00
Delancey, P.....	Horseshoes	54 50
Devlin, John.....	Horseshoes	96 00
Deyo, George, Agt.....	Pails	10 51
Dillon, Jas. J.....	Secretary	14 22
Disbrow, Lee A.....	Livery stable.....	202 14
Dobbie Foundry and Machine Co..	Lead tanks.....	64 75
Dolan, John F.....	Mud sills.....	74 00
Donagan & Swift.....	Speed indicator.....	6 25
Donovan & Son, F.....	Feed	37 86
Doyle, Nicholas.....	Plumber	60 00
Duhamie, H.....	Wagon repairs.....	181 30
Duryea, Wm. E.....	Livery stable.....	462 50
Duryea & Storms.....	Feed	108 91
Early's Sons, John.....	Stable supplies.....	19 95
Eastern Bermudez Asphalt Pav. Co.	Contractors	12 00
Eddy & Co., Geo. M.....	Tape measure.....	99 50
Eureka Fire Hose.....	Hose	384 00

Findlay, Robt.....	Electrician	\$0 90
Finnegan, Thomas E.....	Veterinary	2 00
Gallagher, Frank J.....	Contractor	5,872 54
Gannon, John.....	Contractor	13 50
Gaskell, Alfred.....	Disinfectant	160 00
Gates & Co., M. S.....	Rubber goods.....	58 40
Gilmour, R. M., & Co.....	Palmetto packing.....	22 08
Goodyear Mfg. Co.....	Rubber goods.....	451 80
Glidden, O. H.....	Derrick	25 00
Granger, A. D., & Co.....	Globe valves.....	54 00
Gunnison, A., Co.....	Oils	147 25
Hasse, D.....	Feed	76 70
Haggerty Refining Co.....	Oils	49 30
Hamilton, Wm. J.....	Printing	95 50
Hawthorne & Co.....	Cleaning compound.....	46 80
Henken, Henry.....	Photographer	2 50
Hodgkiss & Co.....	Oil	25 75
Hohs, Leopold.....	Skylight	10 00
Home Rubber Co.....	Hose	360 50
Hughes, E., Son.....	Horseshoes	206 75
Hynes, John.....	Curbs	69 00
Hyde, E. B.....	Maps	592 50
Iron Clad Mfg. Co.....	.....	50 40
Jackson & Cowenhoven.....	Hardware	369 65
Johns, Rudolph.....	Repairing wagons.....	55 00
Johns, H. W., Mfg. Co.....	.....	10 26
Johns, H. W., Manville, Co.....	.....	12 00
Johnson, Addison.....	Brushes	99 08
Johnson, Henry, Co.....	Engine supplies.....	40 34
Jones, H. W.....	Engine supplies.....	46 40
Joyce, E. T.....	Engine supplies.....	147 79
Kalbfleisch, F. H.....	Chemicals	438 01
Keasley, Robert H.....	Pipe covering.....	46 94
Keenan, C. W.....	Paints, oils.....	348 38
Keenan, James, & Son.....	Contractors	450 00
Kelly, John J.....	Horseshoes	41 70
Keuffel & Esser.....	Drawing materials.....	651 20
Kieselbach, H. C.....	Painters' supplies.....	184 54
Knowles, J. A.....	Hardware	52 75
Lane & Degroot.....	Boats	17 99
Lutz, A.....	Leather goods.....	3 25
Macaulay, C. R.....	Glazier	7 40
Malmken, John H., Co.....	Brick and cement.....	45 50
Marlborough, M., & Sons.....	Wagon repairs.....	14 05
Meade, J. Warren.....	Brooms	29 30
Meade's Sons, P.....	Horse shoes.....	27 50
Merchants' Rubber Co.....	Boots	92 40

Monahan, Thomas.....	Contractor	\$216 63
Moehl, H. P.....	Harness	20 75
Moran, Thomas F.....	Clerk	5 56
Morris & Selover.....	Carpenters	13 30
Morse, Wm., & Co.....	Boots	336 00
Morton's Sons, John.....	Lime	475 00
Mullin, Frank.....	Harness	109 00
Murphy, Thomas P.....	Mason	240 00
McCormick & Knox.....	Plumbers	350 00
McElraevy & Hauck.....	Steam supplies.....	92 12
McJilton & Co.....	Boiler compound.....	65 40
McLoughlin & Furman.....	Building material.....	109 50
Newberg, H. F.....		102 75
Newcomb, F. H.....	Hat badges.....	14 00
N. Y. & N. J. Telephone Co.....	Service	208 30
N. Y. Safety Steam Co.....	Engine	615 37
N. Y. Stencil Works.....	Brass figures.....	4 65
Norwood Wire Works.....	Screens	245 00
O'Brien, P. S.....	Carpenter	397 00
O'Loan, Robert.....	Tires	23 00
O'Shea	Dump tickets.....	300 00
Page, Dennis & Co.....	Wagon scales.....	300 00
Patterson Bros.....	Steel	1 06
Phillips, Doup & Co.....	Steam supplies.....	133 64
Pollard, Joseph G.....	Tools	27 17
Pool's, George, Sons & Co.....	Oil	40 24
Pratt, J. W., Co.....	Printers	268 20
Ray Daisley & Co.....	Metal work (7 orders)....	2,152 55
Reimer, Otto E.....	Brick	35 25
Reimer, Rudolph.....	Coal (authority granted by Board of Aldermen)....	4,702 07
Remsen Mfg. Co., I. S.....	Harness and wagons.....	567 01
Rendt, Louis B.....	Dump tickets.....	200 80
Richards, Alfred.....	Rowboat	18 00
Robert, Geo. H., Jr.....	Postage stamps.....	83 60
Ronalds & Johnson Co.....		43 60
Ryan, N.....	Broken stone.....	57 88
Sawkins, John C.....		53 83
Schaeffer & Budenberg.....	Repairing counters.....	27 90
Schaeffer, M.....	Dump tickets.....	20 00
Schluctner Bros.....	Gauge cocks.....	15 00
Schoil, Julian.....	Valve rods.....	7 40
Schwartz & Co.....	Bags	44 00
Schweikert, Philip.....		30 47
Scollay, John A.....	Steam supplies.....	267 03
Sessions Foundry.....		215 16
Shadbolt Mfg. Co.....	Wagon repairs.....	36 40
Smith & Son, Samuel.....		132 00

Shipman, Wm. M., Sons.....	Horse supplies.....	\$54 83
Smith, Gray & Co.....	Buttons	2 00
Soltman, E. G.....	Plumb bobs.....	58 60
Sparks, John W.....	Clerk	5 56
Stackpole & Bro.....	Transit	43 00
Stevenson & Marsters.....	Stationers	71 00
Swanholm, L.....	Feed	29 91
Title Guarantee and Trust Co.....	Information	60 00
Taylor, P. W.....	Clocks	15 50
Tuttle's Sons, S.....	Coal	4 25
U'pington, George.....	Maps	3 00
Verity, Wm. E.....	Timber	38 25
Volkommer & Co.....	Horse	200 00
Voorhees, E. W., & Bro.....	Sawdust	108 00
Wagner, Conrad.....	Livery stable.....	201 50
Walsh's Sons & Co.....	Engine	950 00
Waters, E., Dr. V. S.....	Services	19 50
West Disinfecting Co.....	Disinfectant	140 00
Weston, Joseph.....	Livery stable.....	25 00
Willis, T. B., & Bro.....	Hardware	41 40
Wilson, A. T.....	Rubber stamps.....	45 10
Winslow, George E.....	Clerk	5 56
Worthington, H. R., & Co.....	Pumps	776 04
Woven Steel Hose and Cable Co..	Hose	447 50
Windsor Stables.....	.....	2 50

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

List of merchants and contractors with whom the Bureau has done business during the year, showing the class and value of goods or work ordered from each:

Abraham & Strauss.....	Window shades, furniture, etc.	\$243 62
Abendroth & Root Mfg. Co.....	Pumps	10 40
Allan, Edw. M.....	Pads, etc.....	4 50
Almond, T. R.....	Electric work.....	3 00
American Ice Co.....	Ice supply.....	89 84
American Ice Mfg. Co.....	Ice supply.....	434 25
Automobile Co. of America.....	Automobile	980 00
Audit Co. of New York.....	Directory	3 00
Bacon & Co.....	Coal (authority granted by Board of Aldermen).....	1,563 10
Baker, Voorhis & Co.....	Law books.....	53 75
Banks Law Pub. Co.....	Law books.....	66 75
Barr, Jacob.....	Soft soap.....	1 10
Barrett, L. S.....	Horseshoeing	13 00
Belford, P. S., & Son.....	Moving furniture.....	30 00

Belford, F. J.....	Towing	\$119 00
Benoit, A. V.....	Draughtsmen's materials...	362 25
Berglund, P. W.....	Awnings	163 43
Berri's, Wm., Sons.....	Carpets, etc.....	132 95
Bersch's, Peter, Sons.....	Signs	92 00
Beseler, Chas., Co.....	Photographic supplies....	16 70
Berger, G. B.....	Repairing clock.....	3 00
Birkett, John, & Co.....	Steam fitting, etc.....	4 10
Bishop, Howard W.....	Locksmithing	322 24
Bjurberg, Pete.....	Repairing furniture (emer- gency work—23 orders).	1,260 77
Blanchard, F. G.....	Electric work.....	353 45
Bolstein, H.....	Glazing	67 60
Brasher, K.....	Stenographic services.....	53 25
Brazier, Marie.....	Stenographic services.....	20 00
Briggs, S. A.....	Coal	930 75
Brooklyn Blueprint Co.....	Blueprints	14 25
Brooklyn Citizen.....	Advertising	24 50
Brooklyn Eagle.....	Advertising	24 50
Brooklyn Electric Supply Co.....	Electric supplies.....	132 85
Brooklyn Heights R. R. Co.....	Car fare tickets.....	900 00
Brooklyn Lumber Co.....	Lumber	112 15
Brown, J. K., & Co.....	Flagpole	54 00
Brown, M. S. & P. C.....	Locksmithing	194 62
Brown, R. J.....	Carpenter work.....	311 68
Brooklyn Metal Ceiling Co.....	Metal ceiling.....	94 00
Buckley, John W.....	Rubber hose.....	27 50
Bulwinkle, John M.....	Office supplies, etc.....	496 11
Buffalo Specialty Mfg. Co.....	Polishing liquid.....	9 00
Bureau of Charities Woodyard.....	Kindling wood.....	163 00
Butler, Michael J.....	Plumbing	172 68
Burnett, S. O.....	Locks	6 90
Byrne, C. M.....	Painting	508 11
Byrne, John.....	Carpenter work (emer- gency work—17 orders).	2,097 17
Cairo Carpet Cleaning Co.....	Cleaning carpet.....	5 52
Campbell, M. G.....	Repairing street sweeper..	51 10
Carroll, D. T.....	Postage stamps.....	30 00
Carroll, Loretto.....	Special stenographic serv's.	206 00
Carroll, Thomas.....	Almanacs	3 00
Case & Terry.....	Roofing	20 00
Cashman, John.....	Carpenter and mason work.	540 09
Chatry, R. J.....	Berth of bath.....	975 00
Clark & Baker.....	Index card cases.....	5 40
Clark, Peter.....	Coal (authorized by Board of Aldermen).....	6,222 00
Clark, Wm. H.....	Force pump.....	10 00

Close, E. B.....	Stenographic services.....	\$15 10
Cobb, Geo. W., Jr.....	Furniture	351 50
Collins, C. V.....	States Prison goods.....	431 10
Commonwealth Roofing Co.....	Roofing	979 00
Coney Island & B'klyn R. R. Co...	Car fare tickets.....	40 00
Cook, E. M.....	Berth of bath.....	750 00
Cook, Geo. G.....	Roofing	65 00
Cornell, Sam'l W.....	Hardware	159 02
Cornell, John F.....	Horse keep, etc.....	320 66
Corcoran, Andrew J.....	1,600 gallon tank.....	196 28
Costello, P. H.....	Plaster	75 00
Cronin, Barth. S.....	Building wall.....	86 70
Crompr, C. N.....	Stenographic service.....	7 93
Crowley, Thomas A.....	Plumbing	89 60
Dailey, John D.....	Storage of baths.....	862 75
Daus, F. F., Duplicator Co.....	Duplicators	13 50
Davis, Albert.....	Signs	58 00
Derby Desk Co.....	Furniture	9 00
Deyo, Geo., Agt. and Warden.....	Janitor supplies.....	295 72
Disbrow, Lee A., Mgr.....	Horse keep, etc.....	112 01
Dixon, J. J.....	Stoves, etc.....	120 14
Donavan, D. J.....	Plumbing	59 53
Drake, F. T.....	Masonwork	250 00
Dubey, Edw. F.....	Signs	241 60
Dunning, Wm.....	Stenographic services.....	115 50
Duryea, Wm. E.....	Board of horses.....	48 22
Early's Sons, John.....	Janitors' supplies.....	124 60
Edison Elec. Illuminating Co.....	Electric power.....	185 61
Ennis & Sons, Thomas.....	Wood	3 75
Fallon, M., & Co.....	Plumbing	432 21
Fairbanks Co., The.....	Scales	137 46
Findlay, Robert.....	Gas fixtures, etc.....	399 35
Fitzsimmons, M.....	Sand	21 00
Flanagan & Co., Wm.....	Painting	217 00
Forker & Baldwin.....	Flags	147 25
Forman, R. J.....	Ironwork	3 50
Frie Presse.....	Advertising	8 96
Frost Veneer Seating Co.....	Settee	15 00
Fuller & O'Connor.....	Building	3,522 42
Funk & Wagnalls.....	Dictionary	18 00
Gallagher, Patrick.....	Cleaning carpet.....	214 08
Galligan, M.....	Repairing furniture.....	36 93
Gardner, Willis.....	Plumbing	31 09
Gateson, D. F.....	Plumbing	142 22
Gibbons Contracting Co.....	Alterations to Mun'l Bldg.	650 00
Glasser, A. H.....	Carpenter work.....	756 81
Glidden, O. H.....	Halyards	6 00

Guinan & Co., P.....	Locksmithing	\$1 50
Gunnison & Co., A.....	Oils, grease, etc.....	14 25
Hale & Kilburn Mfg. Co.....	Water coolers.....	24 00
Hall & Son, G. P.....	Photographs	12 96
Hamilton, J. F.....	Com. of deeds fee.....	5 56
Harrington, Alfred B.....	Care of automobile.....	11 18
Hart, Maria N.....	Stenographic services.....	55 00
Haslam, Jas. J.....	Glazing	107 96
Hayes, P., Warden Kings Co. Penitentiary	Brooms, etc.....	82 35
Heepe, O. & I.....	Plumbing	14 00
Heepe, Richard.....	Plumbing	138 48
Helmle, Frank J.....	Personal expenses.....	20 08
Heilner & Sons.....	Coal (authorized by Board of Aldermen).....	2,394 00
Henjes, Henry.....	Coal	80 25
Herring-Hall-Marvin Safe Co.....	Safes, repairing.....	44 72
Hewlett, Geo. B.....	Blueprints, etc.....	297 00
Hirsch Electric Construction Co...	Electrical work.....	191 82
Hodge, Wm. F.....	Repairing furniture.....	51 32
Hodgkiss & Co.....	Hardware	30 08
Hoff, H. J.....	Ironwork	5 52
Hohs, Leopold.....	Roofing	867 41
Hooper, Wm. H.....	Picture frames.....	41 50
Howard, Wm. F.....	Wagon covers.....	15 00
Hoyt & Co.....	Lumber	10 00
Hvass, Chas.....	Repair sweeper.....	127 10
Hyde, E. B.....	Maps	124 00
Incandescent Burner Co.....	Gas fixtures.....	232 24
International Time Recording Co...	Repairing time stamps.....	11 46
Jackson & Cowenhoven.....	Hardware and Tools.....	324 46
Jacobs, Geo. & P.....	Plumbing	216 08
John, Addison, Agt. and Warden..	Janitors' supplies.....	353 75
Johnston, Geo. B.....	Plumbing	137 93
Jones, H. W.....	Engineers' supplies.....	36 40
Journey & Burnham.....	Dry goods.....	5 55
Joyce, E. F.....	Engineers' supplies.....	22 06
Keenan, C. W.....	Oils, etc.....	141 07
Kelly, Frank, & Son.....	Plumbing	31 57
Kelly, Thomas.....	Plumbing	60 66
Kennington Iron Works, Geo. W..	Ironwork	59 78
Keuffel & Esser.....	Drawing materials.....	593 69
Kieselbach, H. H.....	Painters' materials.....	125 57
Kiffe	Photographic supplies.....	20 55
Knowles, J. A.....	Painters' supplies.....	189 25
Kolesch & Co.....	Drawing materials.....	13 70
Kruger, John L.....	Electric work.....	241 16

Lafrenere, J. H.	Feed bags	\$3 00
Lamb, W. & J.	Masonwork (emergency work—3 orders)	1,672 20
Latham, E. W.	Electric work	716 38
Lauterbach, F.	Carriage hire, etc.	59 45
Lazansky, Emil	Glazing	60 95
Lewis, Samuel	Polish, etc.	70 50
Lewis, W. A.	Ropes, etc.	8 00
Lindon, F.	Winding & repairing clocks	95 75
Loeser & Co., Frederick	Shades, etc.	167 90
L. I. Soft Soap Co.	Soft soap	1 10
L. I. Wire Works	Wire screen	30 00
Ludlam & Stuchfield	Surveying	70 00
Maccauley, C. R.	Glazing	397 44
Macmillan Co., The	Books	6 00
Madden, P. J.	Repairing furniture	151 03
Maltby Auto. Mfg. Co.	Storage	3 40
Manhattan Rubber Mfg. Co.	Linen hose	49 00
Mannix, J.	Board of horses	234 20
Mandell and others, Edw.	Site for public bath	4,000 00
Martin, Wm.	Roofing	63 64
Matthews & Co., A. D.	Carpet	96 80
Marston & Son	Coal	999 05
Mead, J. Warren, Agt. and Warden	Furniture, etc.	613 59
Merchants' Rubber Co.	Bath hose	38 50
Merritt & Chapman, D. & W. Co.	Raising sunken bath	140 00
Meserole, B. R.	Blueprints, etc.	50 00
Midget Novelty Co.	Office supplies	1 00
Miller Co., J. G.	Shoring up walls	500 00
Mitchell Vance Co.	Electric work	655 45
Moquin, Offerman, Heissenbuttel } Co.	Coal (authorized by Board of Aldermen)	1,868 40
Moran, William J.	Masonwork, etc. (emergency work—14 orders)	6,261 18
Morris & Selover	Carpenter work (emergency work—19 orders)	2,533 69
Morris, A. J.	Stenographic services	23 84
Mosler Safe Co.	Repairing safes	15 00
Municipal Journal Pub. Co.	Magazines (engineers)	12 00
McConnell Slate Co.	Slate sinks	53 00
McCormick & Knox	Plumbing (emergency work—18 orders)	1,076 05
McDonald, Wm.	Plumbing	32 25
McElraevy & Hauck Co.	Engineers' supplies	484 70
McEnaney & Cathers	Plumbing	2 17
McEnery, Jas.	Carpets	47 95
McGann, Timothy	Horseshoeing	77 50

McIntyre	Postage stamps.....	\$106 00
McLean, Alex.....	Carpenter work.....	442 45
McLean Elevator Co.....	Elevator repairs.....	148 65
McMillan, L. A. & T. A.....	Cleaning carpets.....	266 81
McMurray & Bro., Robert T.....	Ironwork	380 06
Nassau Uniform Co.....	Uniform caps.....	26 25
Nelson Bros.....	Coal	648 35
N. Y. Dock Co.....	Berth for bath.....	400 00
Oakley & Keating.....	Repairing machine.....	80 80
O'Brien & Co., H. A.....	Carriage hire.....	7 00
O'Brien, P. S.....	Carpenter work.....	701 76
Oestricher, Walter M.....	Stenographic services.....	95 09
O'Keefe, Wm. C., & Son.....	Plumbing.	642 77
Oldsmobile Co.....	Care of automobile.....	3 90
O'Neill, E.....	Repairing furniture.....	179 12
O'Rorke, P.....	Electric work.....	440 62
Page, Dennison Co.....	Platform scales.....	42 00
Patterson & Shaw.....	Service and repairs to auto.	124 99
Paulson, Thomas.....	Repairing railing.....	17 30
Pearson, A., & Son.....	Furniture	64 73
Phillips, Doup & Co.....	Steam fitting.....	961 62
Pierson, J. F.....	Berth for bath.....	750 00
Police, Department of.....	Examining boilers.....	32 00
Pope, Jr., Wm.....	Plumbing	411 62
Pool's Son, Geo.....	Oils	7 75
Powers, P. J.....	Painting (emergency work— to orders).....	1,493 05
Remsen Mfg. Co., I. S.....	Harness, etc.....	61 35
Rheinheimer, Chas.....	Repairing furniture.....	44 75
Ridge Boarding and Livery Stable	Carriage hire, etc.....	9 11
Richards, Alfred.....	Wharfage	183 50
Richards, David K.....	Painting	196 98
Riley, P. J.....	Plasterer	680 05
Roberts, Jr., Geo. H.....	Postage stamps.....	192 00
Robertson, W. H.....	Cartage of coal, etc.....	300 00
Rodriques, M. R.....	Electric work.....	102 76
Roebuck, S., Co.....	Ventilators	71 05
Rogers, Wm.....	Plumbing, etc.....	527 23
Rorhberg, A. U.....	Stenographic services.....	80 00
Rosenthal, Jos.....	Roofing	186 52
Ryan, D. J.....	Carpenter work.....	454 28
Salt, S. W.....	Carriage hire.....	5 00
Sanford, C. E.....	Rental of watchmen's regis- ters	300 00
Sanford Coal Co.....	Coal	401 00
Schenck, L. H.....	Cleaning carpets.....	14 00
Schleuchtner Bros.....	Feather dusters, etc.....	10 50

Schneider, Jacob.....	Roofing	\$389 62
Schock, Albert.....	Repairing bicycles.....	29 25
Schoeppler, Chas. M.....	Plumbing	10 00
Scollay, John A.....	Steam fitting (emergency work—14 orders).....	2,180 03
Self Winding Clock Co.....	Repairing clocks.....	37 50
Seleck & Morris.....	Stenographic services.....	23 00
Schackelford, Shirley.....	Stenographic services.....	162 50
Shaw, H. M.....	Garden hose.....	18 74
Shadbolt Mfg. Co.....	Repairing sweep'g machine	23 00
Schmid, John H.....	Stenographic services.....	3 45
Shinzel, A. W.....	Repairing furniture.....	154 97
Shipman's Sons, Wm. M.....	Axle grease.....	1 80
Smedley, Frank.....	Repairing boat.....	10 18
Smith, Gray Co.....	Uniform buttons.....	3 75
Smith, Wm. H., Sons.....	Flagpoles	175 00
Softman, E. G.....	Drawing material.....	171 30
Sommerland, Casper.....	Carpenter work.....	18 40
Standard Time Clock Co.....	Repairing clock.....	5 00
Standard Union.....	Advertising	15 68
Stanley, John F.....	Soft soap.....	1 80
Stevenson & Marsters.....	Office supplies.....	632 08
Stone, Wm.....	Masonwork	75 30
Sullivan Bros.....	Flags	146 25
Sylvesky, S.....	Glazing	30 14
Taylor, P. W.....	Winding & repairing clocks	114 10
Thiebault, H. F.....	Repair safe.....	5 00
Title Guarantee and Trust Co.....	Searching titles.....	78 00
Tonjes Bros.....	Moving furniture.....	80 00
Trow Directory P. & B. B. Co.....	Directory	6 00
Tuttle, S., & Co., Son.....	Coal	917 75
United and Globe Rubber Mfg. Co.	Corrugated rubber.....	5 50
Upington, Geo.....	Directories	91 00
U. S. Changeable Sign Co.....	1 bulletin board.....	49 40
Verney, M. A.....	Typewriting	3 90
Vosburgh Mfg. Co., Wm. C.....	Gas fixtures.....	45 00
Wade, Thomas.....	Masonwork	4 50
Wagner Typewriting Co.....	Typewriting machines.....	239 10
Wallace, M.....	Sand	31 00
Walbrochi & Co.....	Gas fixtures.....	50 00
Washburn, T. J.....	Carriage hire.....	1 50
Watson, Wm.....	Electric work.....	3 00
Weir, Jas., Jr., & Son.....	Care of plot.....	50 00
Welcke, Robert A.....	Maps	90 00
White, Henry.....	Plastering	579 70
White, Jas.....	Roofing	96 97
Willis & Bro., T. B.....	Hardware	74 12

Williams, Laura E.....	Stenographic services.....	\$44 29
Williams & Co., L. R.....	New pump.....	19 77
Wilson & Bailey Mfg. Co.....	Repairing sidewalk.....	10 00
Wilson, A. T.....	Rubber stamps, etc.....	155 05
Wilson, Geo. W.....	Roofing	345 70
Wilson, H. D.....	Stenographic services.....	12 90
Woods, John R.....	Painting	41 08
Woods, M.....	Plumbing	259 01
Woods, N. J.....	Roofing	14 47
Woods, Thomas H.....	Plumbing	234 33
Wyckoff, Seamans & Benedict.....	Typewriting machines (17 orders)	1,390 65
Yawman & Erbe.....	Cabinets, cards, etc.....	253 15

BUREAU OF INCUMBRANCES AND PERMITS, }
MUNICIPAL BUILDING. }

Mr. WILLIAM C. REDFIELD,
Commissioner of Public Works,
Borough Hall, Borough of Brooklyn,
City of New York:

DEAR SIR—In submitting the annual report of the Bureau of Incumbrances and Permits, of which I have been the Acting Superintendent since June 1, 1902, I desire to call your attention to some points in connection with its operations, over which there has been considerable discussion. Early in the present year the attempt to enforce the City Ordinances occasioned some criticism, and in certain quarters the impression was sought to be created that the Incumbrance Bureau was too drastic in its administration. Reference to the figures of this report will show that during the entire year the Bureau only seized 212 pieces of incumbrance. Taking into consideration the many miles of business streets in Brooklyn, such a record surely does not indicate a very severe or oppressive system of law enforcement.

The Bureau has succeeded, however, in causing owners of street encumbering wares, signs and other articles, by a polite and courteous system of notice and request, to remove the same of their own accord. In this manner about 6,000 articles, dangerous to passing pedestrians and annoying to the public, were taken from the sidewalks by their owners. In most instances where our inspectors requested a citizen who violated the ordinances to obey the law there was a prompt compliance, because

the citizen realized that all were treated alike, and no partiality was shown to any one. What the business man really objects to most is to see his competitor treated with indulgence, while he is forced to live up to the letter of the law. All such discrimination and favoritism has been rooted out.

There will always be considerable conflict of opinion as to the method of enforcing the statutes against incumbrances. In a thriving and progressive community business men must be permitted to display their shields and signs of trade, without which they would be hampered in their prosperity. It has been my desire to exercise the wisest possible discretion in executing these ordinances. A common sense policy has been adopted and is now being pursued by the Bureau, and very little, if any, complaint has been uttered of late. Our inspectors are still active and vigilant, but no attempt is made to seize any street obstruction until due notice, both verbally and in writing, has been given to the owner. It is only the man who wilfully and maliciously persists in disregarding the law, by maintaining a flagrant obstruction, who has any reason at present to complain of our activity.

A reasonable restraint against certain storekeepers must ever be exercised to keep them in proper check, as they cannot resist a tendency to use the public highways for the display and sale of their merchandise. If some of these merchants had free scope to their inclinations the sidewalks would be littered with bales, boxes and barrels at all hours and made impassable to the public. The usefulness of the Incumbrance Bureau should largely consist in its efforts to prevent the encroachment of private business upon the public thoroughfares. It is in this direction of negative repression that we are now operating with highly satisfactory results to the public.

In line with this policy I recommended, and with your approval, reduced the number of active inspectors to four, and divided the borough into four inspection districts last December. The inspectors are assigned to a new district each month with a view to preventing favoritism or similar abuses. The

new system has not yet been fully tested, but I believe will prove adequate and satisfactory.

Following is a detailed report for the year 1902, from January 2 to December 31, both inclusive:

COMPLAINTS.

Complaints received from Supervisor of Complaints.....	349
“ “ by mail.....	296
“ “ at office.....	380
“ “ from inspectors.....	6,006
“ “ from Police Department.....	232
“ “ from Department of Street Cleaning.....	208

Total received from all sources.....	<u>7,471</u>
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CLASSIFICATION AND DISPOSAL.

Sidewalk signs removed.....	2,930
Slot machines removed.....	496
Show cases removed.....	111
Boulders removed.....	160
Trees and limbs removed.....	788
Push-carts and wagons removed.....	399
Coal boxes removed.....	115
Miscellaneous incumbrances removed.....	2,683

Total incumbrances removed of every description.....	<u>7,682</u>
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Street washers' notices served.....	3,887
Street washers removed by owners.....	<u>3,124</u>

SUMMARY OF INSPECTORS' WORK.

NAME.	COMPLAINTS MADE	COMPLAINTS SETTLED.	SLIPS SETTLED
McArdle.....	517	623	223
Cloke	838	996	282
Murray.....	762	812	437
Rice	814	967	399
Collins.....	19	22	4

NAME.	COMPLAINTS MADE.	COMPLAINTS SETTLED.	SLIPS SETTLED.
Linch.....	644	688	406
Vanderveer.....	1,048	1,175	317
Haggerty.....	242	436	223
McDermott.....	1,000	1,100	254
North.....	62	55	1
Fagan.....	60	62	19
Total.....	6,006	6,936	2,565

Total number of seizures made.....	212
Incumbrances redeemed.....	138
Incumbrances on hand in Wallabout Yard.....	74

PERMIT DEPARTMENT.

Permits Issued:

Building material.....	742
Vaults	197
Crosswalk	635
Special	8,742
Total	10,316

Permits Passed Upon:

To tap water-pipes.....	1,947
To repair water connections.....	5,291
To repair sewer connections.....	1,219
New sewer connections.....	1,336

Receipts.

From the redemption of incumbrances.....	\$140 75
From the sale of houses and parts of houses and other incumbrances sold at public auction.....	1,014 65

Expenses.

Total cost of removal of incumbrances for year 1902.....	\$2,594 32
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CASHIER'S REPORT.

Statement of Money Received from all Sources during the Year 1902.

Repaving over water connections.....	\$25,470 00
Repaving over sewer connections.....	6,797 00
Repaving over gas connections.....	5,015 50
Repaving over electric-light connections.....	1,823 25
Vault permits.....	1,613 70
Bay-window permits.....	3,088 99
Extra paving.....	430 89
Redemption of street incumbrances.....	140 75
Removing snow from sidewalk.....	187 54
Relaying flags.....	4 50
Special paving.....	236 40
Inspection of work done by corporation.....	2,950 00
Restoring pavement damaged by builder.....	10 00
Total	<u>\$47,768 52</u>

SPECIAL SECURITY DEPOSITS.

Balance to credit of this account January 2, 1902.....	\$17,450 00
Deposits received from January 2, 1902, to December 31, 1902..	13,800 00
	<u>\$31,250 00</u>
Deposits refunded from January 2, 1902, to December 31, 1902..	12,850 00
Credit balance, December 31, 1902.....	<u>\$18,400 00</u>

OTTO KEMPNER,
Acting Superintendent,
Bureau of Incumbrances and Permits.

Statement of the financial operations of the several Bureaus comprising the Department of Public Works of the Borough of Brooklyn, together with detailed statements of expenditures incurred under contract and for the supplies furnished under Department orders.

GENERAL ADMINISTRATION.

Salaries.

Original appropriation.....	\$45,900 00
Transferred to "Supplies and Repairs," Bureau of Public Buildings and Offices.....	3,000 00
Net appropriation.....	\$42,900 00
Expended for salaries, 1902.....	42,546 73
Balance in hands of Comptroller.....	\$353 27

Supplies and Contingencies.

Appropriation	\$2,500 00
Vouchers sent to Comptroller for payment during 1902....	2,445 91
Outstanding liabilities.....	\$54 09
Unexpended	22 44
	\$31 65

TOPOGRAPHICAL BUREAU.

Salaries and Supplies.

Original appropriation.....	\$55,457 25
Transferred to Bureau of Highways, "Labor, Maintenance and Supplies".....	12,000 00
	\$43,457 25

Expended for salaries, 1902.....	\$40,100 99	
Expended for supplies, 1902.....	2,244 02	
		\$42,345 01
Balance in hands of Comptroller December 31, 1902.....		\$1,112 24
Outstanding liabilities.....		969 63
Unexpended		<u>\$142 61</u>

BUREAU OF HIGHWAYS.

Salaries.

Appropriation	\$61,880 00
Transferred to "Labor, Maintenance and Supplies".....	1,500 00
Net appropriation.....	\$60,380 00
Expended for salaries, 1902.....	59,964 65
Unexpended	<u>\$415 35</u>

Labor, Maintenance and Supplies.

Original appropriation.....	\$278,000 00
To transfers from—	
Topographical Bureau—Salaries and supplies. \$12,000 00	
Bureau of Public Buildings and Offices:	
"Supplies and Repairs, 1902".....	10,000 00
"Salaries and Wages, 1902".....	3,000 00
Bureau of Sewers—Sewer repairing and cleaning, pay-roll and supplies.....	5,000 00
Bureau of Buildings:	
"Salaries"	3,700 00
Contingencies and emergencies.....	2,300 00
Bureau of Highways:	
Maintenance and construction of bridges..	2,000 00
"Salaries"	1,500 00
	\$39,150 00
By transfers to Repaving streets and avenues—	
Appropriation, 1902.....	12,836 00
Net increase of appropriation.....	<u>26,664 00</u>

Final appropriation.....	\$304,664 00
By expenditure for salaries.....	211,003 89
By expenditure for supplies.....	63,500 46
Balance in hands of Comptroller.....	\$30,159 65
Outstanding liabilities.....	29,344 87
Unexpended	<u>\$814 78</u>

Repaving Streets and Avenues—Appropriation 1902.

Original appropriation.....	\$50,000 00
To transfers from—	
Bureau of Highways—"Labor, Maintenance and Supplies"	12,836 00
Bureau of Public Buildings and Offices—"Supplies and Repairs"	5,000 00
Bureau of Sewers:	
Repairing and cleaning, pay-rolls and supplies.....	5,000 00
Contracts at public letting.....	5,000 00
Final appropriation.....	\$77,836 00
Expended on contracts, 1902.....	19,473 10
Balance in hands of Comptroller.....	\$58,362 90
Outstanding liabilities (approximate).....	58,362 90

Maintenance of Bridges.

Original appropriation	\$2,000 00
By transfer to "Labor, Maintenance and Supplies".....	2,000 00

Supplies and Contingencies.

Appropriation	\$1,500 00
Expended during 1902.....	1,476 08
Balance in hands of Comptroller.....	\$23 92
Outstanding liabilities.....	23 92

BUREAU OF SEWERS.

Salaries.

Original appropriation.....	\$82,762 75
By transfer to Thirty-first Ward Sewer Districts	
1 and 3.....	\$800 00
By transfer to Twenty-sixth Ward Disposal	
Works	1,200 00
	<u>2,000 00</u>

Final appropriation.....	\$80,762 75
Expended for salaries, 1902.....	80,609 82
Unexpended	<u>\$152 93</u>

Sewers, Repairing and Cleaning; Pay-rolls and Supplies.

Original appropriation.....	\$77,168 25
By transfer to "Twenty-sixth Ward Disposal Works"	\$300 00
By transfer to Thirty-first Ward Sewer Districts 1 and 3.....	1,700 00
By transfer to Bureau of Highways—"Labor, Maintenance and Supplies,".....	5,000 00
"Labor, Maintenance and Supplies".....	5,000 00
	<u>12,000 00</u>
Net appropriation.....	\$65,168 25
Expended for salaries, 1902.....	\$48,717 07
Expended for supplies, 1902.....	11,007 27
	<u>59,724 34</u>
Balance in hands of Comptroller.....	\$5,443 91
Outstanding liabilities.....	3,296 13
Unexpended	<u>\$2,147 78</u>

Contracts at Public Letting.

Original appropriation.....	\$25,000 00
By transfer to Bureau of Highways—"Labor, Maintenance and Supplies".....	5,000 00
Net appropriation.....	<u>\$20,000 00</u>
Expended for salaries, 1902.....	\$1,648 20
Expended for supplies, 1902.....	15,979 10
	<u>17,627 30</u>
Balance in hands of Comptroller.....	\$2,372 70
Outstanding liabilities.....	1,484 56
Unexpended	<u>\$888 14</u>

Thirty-first Ward Sewerage Districts Nos. 1 and 3.

Original appropriation.....	\$50,391 00
To transfer from sewers, repairing and cleaning, pay-roll and supplies.....	1,700 00

To transfer from salaries.....	\$800 00
Final appropriations.....	\$52,891 00
Expended for salaries, 1902.....	\$31,292 31
Expended for supplies, 1902.....	15,846 68
	47,138 99
Balance in hands of Comptroller.....	\$5,752 01
Outstanding liabilities.....	5,718 46
Unexpended	\$33 55

Twenty-sixth Ward Disposal Works.

Original appropriations.....	\$35,137 25
To transfer from "Salaries".....	\$1,200 00
To transfer from sewers, repairing and cleaning, pay-rolls and supplies.....	300 25
	1,500 25
	\$36,637 50
Expended for salaries, 1902.....	\$22,641 03
Expended for supplies, 1902.....	8,967 59
	31,608 62
Balance in hands of Comptroller.....	\$5,028 88
Outstanding liabilities.....	4,989 93
Unexpended	\$38 95

Dredging Sewer Outlets.

Original appropriation.....	\$12,000 00
By transfer to Bureau of Public Buildings and Offices— "Supplies and Repairs.....	4,000 00
Net appropriation.....	\$8,000 00
Expended for salaries, 1902.....	\$328 75
Expended for supplies, 1902.....	5,051 00
	5,379 75
Unexpended	\$2,620 25

Supplies and Contingencies.

Appropriation	\$2,000 00
Expended	1,815 42

Balance in hands of Comptroller.....	\$184 58
Outstanding liabilities.....	87 00
Unexpended	\$97 58

Thirtieth Ward, Bath Beach District.

Appropriation	\$4,303 75
Expended	3,801 32
Balance in hands of Comptroller.....	\$502 43
Outstanding liabilities.....	283 50
Unexpended	\$218 93

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

Salaries and Wages.

Original appropriation.....	\$137,828 00
By transfer to Bureau of Highways—"Labor, Maintenance and Supplies".....	\$3,000 00
By transfer to Bureau of Public Buildings and Offices—"Supplies and Repairs".....	3,500 00
	6,500 00
Final appropriation.....	\$131,328 00
Expended for salaries and wages, 1902.....	130,881 50
Unexpended	446 50

Supplies and Repairs.

Original appropriation.....	\$110,975 00
By transfers to Bureau of Highways—"Labor, Maintenance and Supplies".....	\$10,000 00
Repaving streets and avenues, appropriation 1902	5,000 00
	\$15,000 00
To transfer from General Administra- tion—"Salaries"	\$3,000 00
To transfer from Bureau of Public Buildings and Offices—"Salaries".	3,500 00
To transfer from Bureau of Sewers— "Dredging Sewer Outlets".....	4,000 00
	10,500 00

Net deduction.....	4,500 00
Final appropriation.....	\$106,475 00
Expended to December 31.....	75,890 21
Balance in hands of Comptroller.....	\$30,584 79
Outstanding liabilities.....	28,997 05
Unexpended	\$1,587 74

Supplies and Contingencies.

Appropriation	\$1,000 00
Expended, 1902.....	975 19
Balance in hands of Comptroller.....	\$24 81
Outstanding liabilities.....	3 00
Unexpended	\$21 81

RECAPITULATION.

ACCOUNT.	FINAL APPROPRIA- TION.	VOUCHERS SENT TO COMP- TROLLER.	BALANCE IN HANDS OF COMP- TROLLER.	OUTSTAND- ING LIA- BILITIES.	UNEX- PENDED.
<i>General Administration.</i>					
Salaries.....	\$42,900 00	\$42,546 73	\$353 27	.....	\$353 27
Supplies and Contingencies....	2,500 00	2,445 91	54 09	\$22 44	31 65
<i>Topographical Bureau.</i>					
Salaries and Supplies.....	43,457 25	42,345 01	1,112 24	969 63	142 61
<i>Bureau of Highways.</i>					
Salaries.....	60,380 00	59,964 65	415 35	.....	415 35
Labor, Maintenance and Sup- plies.....	304,664 00	274,504 35	30,159 65	29,344 87	814 78
Repaving Streets and Ave- nues, 1902.....	77,836 00	19,473 10	58,362 90	58,362 90	.....
Maintenance of Bridges.....	.....	.....	.....	.....	.....
Supplies and Contingencies....	1,500 00	1,476 08	23 92	23 92	.....
<i>Bureau of Sewers.</i>					
Salaries.....	80,762 75	80,609 82	152 93	.....	152 93
Sewers, Repair and Cleaning; Pay-rolls and Supplies...}	65,168 25	59,724 34	5,443 91	3,296 13	2,147 78
Contracts at Public Letting...}	20,000 00	17,627 30	2,372 70	1,484 56	888 14
Thirty first Ward Sewerage Districts 1 and 3.....}	52,891 00	47,138 99	5,752 01	5,718 46	33 55
Twenty-sixth Ward Disposal Works.....}	36,637 50	31,608 62	5,028 88	4,989 93	38 95
Thirtieth Ward, Bath Beach District.....}	4,303 75	3,801 32	502 43	283 50	218 93

ACCOUNT.	FINAL APPROPRI- ATION.	VOUCHERS SENT TO COMP- TROLLER.	BALANCE IN HAND OF COMP- TROLLER.	OUTSTAND- ING LIA- BILITIES.	UNEX- PENDED.
Dredging Sewer Outlets.....	\$8,000 00	\$5,379 75	\$2,620 25	.....	\$2,620 25
Supplies and Contingencies.....	2,000 00	1,815 42	184 58	\$87 00	97 58
<i>Bureau of Public Buildings and Offices.</i>					
Salaries and Wages.....	131,328 00	130,881 50	446 50	.....	446 50
Supplies and Repairs.....	106,475 00	75,890 21	30,584 79	28 997 05	1,587 74
Supplies and Contingencies.....	1,000 00	975 19	24 81	3 00	21 81
Totals	\$1,041,803 50	\$898,203 29	\$143,595 21	\$133,583 39	\$10,011 82

BONDED ACCOUNTS.

	APPROPRIATED.	EXPENDED.
<i>Bureau of Highways.</i>		
Repaving Streets and Avenues (Secs. 48 and 169, Chap. 466, Laws 1901).....	.....	\$842,437 59
Street Improvement Fund .....	.....	204,339 91
Constructing Bridges on Garrison Creek over Ave- nue U.....	\$16,000 00	.....
Construction, Erection and Maintenance of Street Signs, Borough of Brooklyn .....	.....	1,064 00
Restoring and Repairing—Special Fund.....	.....	40,359 95
Common Lands Fund of Gravesend.....	.....	973 72
<i>Bureau of Sewers.</i>		
Street Improvement Fund.....	.....	667,569 07
Atlantic Avenue Improvement Fund.....	.....	2,857 10
Dredging Gowanus Canal	9,200 00	.....
Wallabout Market Improvement Fund.....	.....	255 00
<i>Bureau of Public Buildings and Offices.</i>		
Public Bath Fund.....	153,000 00	9,730 83
Public Comfort Stations.. ..	128,000 00	.....
Additions and Alterations to Hall of Records.....	400,000 00	130 00
Repairs to Borough Hall.....	17,500 00	.....

CONTRACTS.

During the year 249 contracts were entered into, of which
186 were by the Bureau of Highways.

57 " " Sewers.

6 " " Public Buildings and Offices.

The amount chargeable to each appropriation or bonded account and the number of contracts awarded to each contractor, together with the total amounts, are herewith appended:

BUREAU OF HIGHWAYS.

	NUMBER OF CONTRACTS.	AMOUNT.
<i>Appropriations.</i>		
" Labor, Maintenance and Supplies".....	16	\$47,896 77
" Repaving Streets and Avenues, Approp- } riation 1902"..... }	10 and part of 1	78,725 03
<i>Bonded Accounts.</i>		
" Repaving Streets and Avenues," sections } 48 and 169, chapter 466, Law 1901.... }	94 and part of 2	1,432,124 92
" Street Improvement Fund".....	62 and part of 1	403,729 01
" Construction, Bridges on Garrison Creek, } over Avenue U"..... }	1	15,800 47
" Construction, Erection and Maintenance } of Street Signs," Borough of Brooklyn. }	1	2,688 00
Totals.....	186	\$1,980,964 20

BUREAU OF HIGHWAYS—CONTRACTS.

The contracts entered into by this Bureau were with the undermentioned contractors, as follows:

CONTRACTOR.	No. OF CONTRACTS.	AMOUNT.
Baird, A. R.....	1	\$648 00
Bonacer, Dominick.....	2	6,002 87
Brooklyn Alcatraz Asphalt Co.....	14	219,869 20
Byrnes, Thomas F.....	4	19,802 60
Castle, Walter L.....	2	7,367 00
Caesar, Julius, Jr.....	1	2,688 00
Chapman & Ryan.....	2	759 13

CONTRACTOR.	NO. OF CONTRACTS.	AMOUNT.
Cranford Company.....	39	\$488,729 90
Conklin, Jacob E.....	3	16,842 90
Cronan, Barth S.....	1	15,800 47
Cunningham & Kearns.....	2	25,464 80
Dovavan, Alfred E.....	1	9,554 50
Donovan, F., & Sons.....	1	992 77
Gallagher, Frank J.....	3	6,029 64
Graham, James P.....	7	76,958 63
Green River Asphalt Company.....	1	7,077 00
Harris, Isaac.....	1	10,419 60
Harnden, James H.....	4	15,973 55
Hickey, M. F.....	2	38,121 50
Holmes, James H., Company.....	3	32,549 55
Interstate Paving Company.....	21	337,132 30
Jennings, James.....	5	5,823 69
Kelly, William.....	1	21,385 15
Kelly, James.....	1	64,075 85
Lennox, John G.....	2	1,633 50
Lynan, Peter F.....	2	4,744 12
Mangieri, Louis.....	3	2,062 51
Mangieri Company.....	5	27,935 76
Maillie, John F.....	1	20,616 98
Meagher, Matthew T.....	2	41,334 50
Murray & Reid.....	2	2,534 40
Murphy Bros.....	2	12,986 69
Moran, estate of, J. W.....	2	13,279 04
McMahon, Joseph.....	1	10,548 30
McDermott & Foxton.....	2	7,874 90
Norton, Dennis.....	9	61,473 84
Quinn, James.....	3	79,321 55
Quinn, John E.....	1	37,619 30

CONTRACTOR.	NO. OF CONTRACTS.	AMOUNT.
O'Grady, John.....	1	\$25,991 30
Schneider, N., Sons.....	1	1,186 08
Scholl, Julian, & Co.....	2	6,344 00
Theiss & Fletcher.....	1	1,036 80
Uvalde Asphalt Paving Company.....	18	170,117 95
Vofne, Charles J.....	1	7,776 00
Vulcanite Paving Company.....	2	8,856 58
Whalen, Richard.....	1	1,710 40

BUREAU OF SEWERS—CONTRACTS.

	NUMBER OF CONTRACTS.	AMOUNT.
<i>Appropriations.</i>		
Sewers, Repairing and Cleaning, Pay-rolls } and Supplies	Part of 2	\$2,013 00
Contracts at Public Letting.....	Part of 4	17,592 35
Thirtieth Ward, Bath Beach District.....	Part of 1	282 00
Twenty-sixth Ward Disposal Works.....	Parts of 3	6,401 82
Thirty-first Ward, Sewer Districts 1 and 3....	Parts of 4 and 2, 6	9,523 74
Dredging Sewer Outlets.....	1	5,166 66
<i>Bonded Accounts.</i>		
Street Improvement Fund.....	44	1,423,934 19
Atlantic Avenue Improvement Fund.....	2	70,328 00
Total .....	.....	\$1,535,241 76

These contracts were made with the undermentioned contractors and merchants, as follows:

	NUMBER OF CONTRACTS.	AMOUNT.
Clark, Audley.....	1	\$6,528 00
Creem, John J.....	4	425,253 85
Gasterger & Schaefer.....	1	1,311 74
Graham, James F.....	3	9,058 85
Holmes, James H., & Co.....	3	37,286 65
Jennings, James.....	18	22,094 35
Meagher, Matthew T.....	2	6,455 90
Molloy, James, & Co.....	1	633,256 25
Murphy Bros.....	3	5,896 08
McCollom, A. J.....	1	4,582 80
McNamee, John.....	1	313,594 75
McSwegan, F. H. & O.....	1	2,350 00
Norton, Dennis.....	2	2,274 00
New York Sewer Construction Co.....	1	5,537 00
O'Grady, John... ..	1	35,715 00
Packard, R. G., Co.....	1	5,166 66
Reilly, James.....	2	2,081 50
Reilly, William F.....	2	2,324 20
Schleuchtner Bros.....	1	1,575 00
Sigretto & Manino.....	6	7,242 91
United and Globe Rubber Manufacturing Co.....	1	1,873 02
Walsh, John D.....	1	2,818 10

PUBLIC BUILDINGS AND OFFICES—CONTRACTS.

	NO. OF CONTRACTS.	AMOUNT.
<i>Appropriations.</i>		
Supplies and Repairs.	4	\$13,350 24
<i>Bonded Accounts.</i>		
Additions, extensions, alterations and improvements to the Kings County Hall of Records, etc. .... }	....	398,700 00
Public Bath Fund. ....	....	54,564 00
Total. ....	....	\$466,614 24
These were awarded as follows :		
Dwyer, Thomas.	1	\$398,700 00
Early, Joseph N.	1	1,884 94
Lamb, W. & T.	1	54,564 00
Moquin-Offerman-Heisenbittel Coal Co.	1	6,912 30
Seiz, Andreas.	1	1,180 00
Smyth, Neptune B.	1	3,373 00

GOODS PURCHASED ON DEPARTMENT ORDERS.

There were issued during the year 1902, 3,221 orders for merchandise and repairs, of which number 137 were from the Bureau of Highways, 124 from the Bureau of Sewers and 2,960 from the Bureau of Public Buildings and Offices, the latter Bureau early in the year becoming the purchasing agent for the Department.

These department orders may again be divided as follows: Repairs, 1,152; supplies, 2,069.

The goods purchased for each Bureau are arranged in alphabetical order, and while some of the bills are not yet presented for payment, the amounts are practically correct.

TOPOGRAPHICAL BUREAU.

Blueprints	\$107 21
Carfare books (outside force and field parties)	550 00
Compasses	35 27
Correcting maps.	110 00
Draughting materials.	1,119 78
Engineering instruments.	468 62
Hardware	98 32

Ink	\$27 00
Maps	30 59
Mounting maps.....	20 15
Personal disbursements.....	305 34
Plumb bobs.....	15 00
Repairing instruments.....	93 75
Repairing tapes.....	104 47
Stamps	6 00
Stationery	20 40
Steel chains.....	32 40
	\$3,144 30

BUREAU OF HIGHWAYS.

Including the Bureau of Incumbrances.

Asphalt examination.....	\$678 35
Asphalt list.....	80 00
Bicycles and repairs to same (inspectors of incumbrances)..	115 25
Binding atlas.....	3 00
Blueprint paper.....	61 92
Bluestone	1,265 00
Broken stone.....	826 90
Brussels rugs.....	21 45
Buggy	225 00
Building cesspools.....	511 00
Carfare tickets, engineers, inspectors, foremen, etc.....	1,545 00
Cards, sheets, etc.....	15 50
Cement	429 00
Cement moulds.....	161 10
Claw bars.....	92 81
Coal	412 00
Concrete examination.....	50 00
Commissioner of deeds, fees.....	11 12
Corn brooms.....	1 63
Correcting maps.....	110 00
Crushed quartz.....	138 77
Diaries	22 60
Draughting materials.....	167 36
Electric work.....	175 00
Electrotype	2 00
Engineers' supplies.....	34 35
Feed	672 25
Furniture	226 00
Flagging	450 00

Fly nets.....	\$27 50
Folding rules.....	5 76
Flat cars, use of.....	45 00
Gas jets.....	11 34
Gasoline	3 40
Granite blocks.....	572 92
Granite pavements.....	515 40
Grading sidewalk (Vernon avenue).....	173 00
Hardware	398 74
Harness, etc.....	558 25
Horses	1,450 00
Horse keep.....	1,532 66
Horseshoeing	844 00
Inspectors' badges.....	83 33
Kerosene	23 69
Laboratory supplies.....	1,084 48
Ladders	14 00
Levels	340 00
Lumber	1,210 10
Mack repressed blocks.....	120 60
Maps, etc.....	1,086 00
Moving curbs.....	45 00
New stop-cock box.....	101 43
Oil	2 59
Painting sprinkling trucks.....	360 00
Paving gravel.....	328 85
Paving gutters.....	572 88
Paving pitch.....	607 65
Park basin covers.....	35 00
Personal disbursements.....	27 79
Pine stakes.....	560 00
Plow	63 00
Printed slips.....	30 05
Purple slate.....	7 50
Raising pavement.....	200 00
Refilling Crescent street.....	166 00
Reflagging	682 00
Relaying cement pavements.....	117 18
Removing incumbrances.....	116 05
Rent	345 83
Repairing Court street.....	771 61
Repairs to stable.....	492 55
Repairing streets.....	3,528 95
Repairing wagons.....	1,400 00
Resetting bluestone.....	70 00
Resetting curb.....	355 00
Repairing safe.....	4 00

Repairing transit.....	\$13 50
Repaving with asphalt.....	252 35
Road machine.....	170 00
Ruby lanterns and globes.....	188 99
Ruby signs.....	8 50
Rubber boots.....	44 00
Rubber mats.....	48 00
Rubber stamps.....	22 19
Sand sprinklers, two (one \$600, two horse; one \$350, one horse)	950 00
Sand	183 91
Sand screen.....	8 00
1 scraper, 1 sweeper.....	794 00
Service connections.....	360 00
Set of tires.....	83 00
Sewer basin.....	50 00
Small screens.....	24 80
1 blade scraper, gravel heater, etc.....	610 00
Stamps	216 00
Stamped envelopes.....	284 45
Stationery supplies.....	100 10
Stable supplies.....	222 28
Stenographic services (special).....	123 82
Steel tapes.....	106 10
Street signs.....	9 52
Street sweeping machine.....	772 50
Tape lines and repairing same.....	87 15
Telephone books, used by inspectors and foremen.....	1,300 00
Telephone service.....	12 80
Tools, repairing same, etc.....	959 59
Veterinary services.....	153 85
Wheeler locks and chains.....	2 00
White lead.....	684 00

BUREAU OF SEWERS.

Sewers, Repairing and Cleaning; Pay-rolls and Supplies.

Basin heads and pans.....	\$113 00
Brick	62 51
Broken stone.....	9 00
Carfare tickets.....	50 00
Carpentry	397 00
Cement	133 87
Coal	4 25
Derrick	25 00
Dump tickets.....	520 80

Fire engine, for pumping out flooded cellars, etc.....	\$950 00
Gas	34 56
Hose carts.....	152 00
Hardware	252 62
Harness and repairs.....	88 50
Horse keep.....	1,039 26
Horseshoeing	339 25
Ladders	74 40
Life raft.....	17 99
Lumber	61 25
Manhole heads and covers.....	2,173 58
Maps	592 50
Masonry	1,352 50
Mudsills	85 00
Pails and dippers.....	216 63
Paving	44 80
Photographs	13 75
Plumbing	800 00
Rubber goods.....	1,127 60
Sand	61 00
Sewer pipe.....	510 65
Skylight	10 00
Stable supplies.....	126 24
Stationery	15 00
Surveyor's instruments.....	249 25
Tools and repairs.....	174 51
Wagons and repairs.....	373 95

Thirtieth Ward, Bath Beach District.

Hose (750 feet) and hose cart.....	\$225 00
Rubber boots, 18 pairs.....	68 00

Supplies, Twenty-sixth Ward Disposal Works.

Boiler compound.....	\$78 60
Cotton waste.....	30 20
Castings	32 00
Coal	4,375 28
Chemicals	347 13
Disinfectant	105 00
Engineman's supplies.....	380 17
Flax packing, etc.....	53 42
Glass	7 40
Globe valves, discs, etc.....	49 55
Horse keep.....	300 00

Harness	\$30 00
Hose	52 50
Hardware	71 45
Lime	475 00
Lumber	111 90
Ladders	7 20
Machinery	177 28
Paint	153 46
Paint brushes.....	68 65
Pipe covering.....	12 00
Rubber boots.....	96 00
Removing field magnets.....	120 00
Repairing wagon.....	50 00
Repairing dynamo.....	122 00
Salt	71 25
Scale	150 00
Steam boiler inspection.....	16 00

Goods Ordered Under Contract.

Forage	\$898 68
Rubber goods.....	1,114 32
Lime	1,938 00
Coal	2,854 80
Forage	413 06
New boiler.....	1,575 00
Rubber goods.....	392 88
New pump.....	2,350 00
Lime	4,590 00
Coal	1,728 00
Rubber goods.....	90 22

Supplies, Thirty-first Ward, Sewerage Districts Nos. 1 and 3.

Asphaltum	\$42 40
Barrows	129 25
Brick, stone, etc.....	57 75
Buggy repairs.....	10 00
Cement	59 25
Chemicals	90 88
Clock	6 50
Coal	4,725 37
Cart repairs.....	6 00
Disinfectant	225 00
Engine	600 00
Engineman's supplies.....	600 77

Feed	\$144 41
Gas-pipe, etc.....	38 65
Glass	26 36
Harness repairs.....	20 75
Hardware	275 12
Horseshoeing	62 50
Hose, rubber.....	360 50
Ladders	14 00
Lead tanks.....	64 75
Lime	145 50
Lumber and timber.....	463 95
Masonry	30 50
Paints, lead, etc.....	195 41
Paint brushes.....	22 28
Plumbing	82 00
Pump and supplies.....	757 96
Roofing	2,023 32
Rubber goods.....	109 70
Sawdust	121 00
Scale	150 00
Screen	245 00
Steamfitting, etc.....	360 29
Soda	11 25
Veterinary services.....	10 00

Statement of Goods Purchased during the Year 1902 Chargeable to Supplies and Contingencies.

Badges and buttons.....	\$16 00
Binding	60 80
Boots	12 00
Buggy repairs.....	9 50
Camera	81 08
Candles	12 65
Carfare tickets.....	435 00
Clipping horse.....	2 50
Disbursements, personal.....	42 92
Engineer's supplies.....	211 35
Harness, etc.....	22 50
Kerosene oil.....	6 50
Leather goods.....	44 00
Maps	6 25
Photographs, etc.....	7 50
Printing	418 30
Rubber stamps.....	45 90
Searching title.....	60 00

Sharpie	\$18 00
Stamps and stamped envelopes.....	294 40
Stationery	111 65
Tin cans.....	8 50
Typewriting	65 44

BUREAU OF PUBLIC BUILDINGS AND OFFICES.

Supplies.

Automobile and maintenance.....	\$1,155 02
Ash cans.....	263 05
Awnings	306 43
Bath supplies.....	389 29
Bicycle repairs.....	14 75
Books, law, directories, etc.....	249 50
Carpets, cleaning and relaying.....	494 13
Clocks and repairing and winding.....	183 25
Coal on contract.....	6,912 30
Coal purchased in open market (authorized by Board of Aldermen)	17,559 33
Cartage and trimming of coal.....	370 00
Disinfectants	64 00
Draughtmen's materials.....	1,164 85
Electric power.....	185 61
Electric work and supplies.....	596 21
Engineer's supplies.....	527 54
Flags	189 00
Furniture, carpets, etc.....	2,071 66
Furniture, repairing.....	1,415 31
Glass	66 50
Hardware and tools.....	208 06
Horse keep, etc.....	984 19
Hose	67 74
Ice	518 11
Insurance	20 00
Janitors' supplies on contract.....	1,777 58
Janitors' supplies from State Prisons.....	981 49
Janitors' supplies bought in open market.....	485 77
Locks	22 90
Lumber	25 00
Maps	206 50
Office supplies.....	888 09
Painters' supplies.....	381 12
Pumps	29 77
Rental of registers.....	300 00

Removal of furniture.....	\$65 00
Safes, repairing, moving, etc.....	48 72
Sand	39 00
Scales	42 00
Shades	341 30
Signs	61 00
Special stenographic services.....	458 76
Stamped envelopes.....	145 25
Step-ladder	5 90
Street sweeper, repairing, etc.....	233 31
Stoves, repairing, etc.....	16 08
Surveyors' instruments.....	28 38
Telephone service.....	4,665 56
Telephone booth.....	100 00
Transportation	974 50
Towels	21 00
Typewriting machines.....	1,282 25
Ventilators	193 20
Water coolers.....	33 46
Wood	166 75

Total	<u>\$49,995 47</u>
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Repairs.

Berthing of baths.....	\$2,875 00
Carpenter work.....	9,386 88
Electric work.....	2,893 36
Elevator repairs.....	513 63
Gas fitting.....	412 17
Glazing	664 51
Halliards	6 00
Hardware	74 39
Ironwork	1,017 74
Locksmithing	389 03
Lumber	39 65
Masonwork	11,603 42
Metal ceiling.....	94 00
Miscellaneous	123 64
Painting	2,633 70
Plastering	1,179 31
Plumbing	5,052 04
Raising boilers.....	192 60
Raising sunken bath.....	140 00
Repairing baths (contract).....	3,373 00
Removing Court Special Session.....	15 00
Removing scale.....	127 46

Repairing tower clock.....	\$27 10
Roofing	2,943 92
Signs	370 15
Steam fitting.....	3,635 89
Storage of baths.....	1,004 75
Towing baths.....	238 00
Repairs	\$51,026 43
Supplies	49,995 47
Headstones to graves of deceased soldiers, sailors and marines of the Civil War.....	1,180 00
\$102,201 90	

Supplies and Contingencies.

Almanacs	\$3 00
Carfare	10 00
Carriage hire.....	7 50
Emergency operation of telephone switchboard.....	29 00
Personal disbursements.....	20 64
Postage	333 00
Searching titles.....	78 00
Special stenographic services.....	497 05
\$978 19	

The charge for supplies and repairs as set forth in the preceding tables are distributed among the several public buildings as follows:

	SUPPLIES.	REPAIRS.	TOTAL.
Borough President	\$2,952 40	.....	\$2,952 40
Commissioner of Public Works.....	937 67	.....	937 67
Assistant Commissioner of Public Works.....	927 88	.....	927 88
Topographical Bureau.....	849 61	.....	849 61
Bureau of Highways.....	2,015 73	.....	2,015 73
Bureau of Sewers.....	1,980 87	.....	1,980 87
Bureau of Public Buildings and Offices..	1,824 65	.....	1,824 65
Coal not distributed.....	2,745 00	.....	2,745 00
Bureau of Incumbrances.....	130 54	.....	130 54
Bureau of Buildings.....	1,328 20	.....	1,328 20

	SUPPLIES.	REPAIRS.	TOTAL.
Borough Hall.....	\$4,133 10	\$8,629 62	\$12,762 72
Municipal Building.....	5,216 62	10,567 16	15,783 78
County Court-house.....	5,990 58	5,902 01	11,892 59
Hall of Records.....	1,646 08	1,598 30	3,244 38
Kings County Jail.....	6,308 95	5,092 52	11,401 47
Disciplinary Training School.....	4,479 76	3,053 51	7,533 27
First District Magistrate's Court.....	161 53	1,034 83	1,196 36
Second District Magistrate's Court.....	137 63	45 12	182 75
Third District Magistrate's Court.....	1,041 90	462 37	1,504 27
Fourth District Magistrate's Court.....	116 70	695 85	812 55
Fifth District Magistrate's Court.....	184 50	90 60	275 10
Sixth District Magistrate's Court.....	164 02	253 17	417 19
Seventh District Magistrate's Court.....	61 22	480 94	542 16
Eighth District Magistrate's Court.....	32 09	87 85	119 94
First District Municipal Court.....	137 08	.....	137 08
Second District Municipal Court.....	171 66	977 70	1,149 36
Third District Municipal Court.....	437 56	1,009 99	1,447 55
Fourth District Municipal Court.....	53 93	130 00	183 93
Fifth District Municipal Court.....	153 45	15 00	168 45
Administration Building.....	269 98	419 08	689 06
Wallabout Market Street Cleaning.....	1,464 94	.....	1,464 94
Public Baths.....	422 47	8,885 18	9,307 65
Paint Shop.....	292 22	.. ..	292 22
Old Ninth Precinct Station-house.....	.....	73 64	73 64
Firemen's Hall, Eastern District.....	.....	619 21	619 21
Transportation.....	830 00	.....	830 00
Atheneum Building.....	26 98	349 46	376 44
Public Libraries.....	.....	503 07	503 07
Miscellaneous.....	367 97	50 00	417 97
	\$49,995 47	\$51,026 18	\$101,021 65

TELEPHONES.

Statement showing the distribution of the telephone service of the borough offices during the year 1902, together with a comparison, where possible, with the expenditures of 1901:

	1902.	1901.
Office of the President, 300 Main, to February 13.....	\$35 04	.....
Office of the President, 374 Main... ..	15 20	.....
Residence of the President, 26 Bedford.....	47 78	.....
3960 Main, 12 per cent. of.....	343 90	.....
	\$461 82	\$162 62
Office of the Com. Public Works, 3849 Main, to Feb. 13...	\$22 49	.....
3960 Main, 9 per cent. of.....	257 93	.....
	\$280 42	No record
Office of Assistant Commissioner, to February 18.....	\$31 29	.....
Residence of Assistant Commissioner, from February 1....	50 49	.....
3960 Main, 6 per cent. of.....	171 95	.....
	\$253 73	No record
Topographical Bureau, 251 Main, to February 16.....	\$31 84	.....
3960 Main, 7 per cent. of.....	200 61	.....
	\$232 45	\$203 30
Bureau of Highways, R. 21, to February 19.....	\$39 70	.....
Bureau of Highways, Street Repairs.....	26 99	.....
Bureau of Highways, Yard, 92 Boulevard Park.....	157 40	.....
Bureau of Highways, Residence of J. Covert, from Apr. 12	34 45	.....
3960 Main, 15 per cent.	429 88	\$857 20
Telephone Coupons.	1,300 00	1,200 00
	\$1,988 42	\$2,057 20

	1902.	1901.
Bureau of Sewers, R. 46, to February 19.....	\$62 44	.....
Repair Yard, 707 Main.....	159 73	.....
Purifying Works, 14 East New York.....	143 02	.....
Caisson No. 4, 32 F., Coney Island.....	154 00	.....
Thirty-first Ward, Districts, 1 and 3, 6 Coney Island.....	149 20	.....
Residence of Superintendent Thatcher, 728 South.....	51 00	.....
Residence of Julius Klinge, 350 Bedford.....	51 00	.....
3960 Main, 9 per cent.....	257 93	.....
	\$1,028 32	\$942 80
Bureau of Public Buildings and Offices—		
Office Superintendent, 2400 Main, to February 13.....	\$33 77	.....
Office Engineer, 1494 Main, to February 18.....	33 94	.....
Office Supplies, 950 Main, to February 16.....	23 44	.....
Residence F. J. Helmle, 2385 Williamsburg, from Jan. 29..	51 89	.....
Residence E. S. White, 570 Bedford.....	69 87	.....
3960 Main, 11 per cent.....	315 25	.....
	\$528 16	\$976 50
Bureau of Incumbrances and Permits—		
3960 Main, 3 per cent.....	\$85 97	No record
Bureau of Buildings, to February 15.....	\$81 77	.....
Residence Superintendent Calder, 722 South.....	78 95	.....
Residence Assistant Superintendent Bennett, 174 Bay Ridge	80 49	.....
Residence Inspector Hawkshurst, 3098 Main.....	75 40	.....
3960 Main, 28 per cent.....	802 46	.....
	\$1,119 07	\$1,117 86
Total.....	\$5,978 36	\$5,460 28
Of which the Switch System cost.....	\$2,865 88	.....
Outside Telephones.....	1,812 48	.....
Telephone Coupons.....	1,300 00	.....
Total... ..	\$5,978 36	.....

	1902.	1901.
This sum was paid for as follows :		
Bureau of Highways, Labor, Maintenance and Supplies....	\$1,312 80	.....
Bureau of Public Buildings and Offices, Supplies and Repairs	4,665 56	.....
Total... ..	\$5,978 36	.....
Total, 1902.....	\$5,978 36	.....
Total, 1901.....	.....	\$5,460 28
Add to 1901, Department of Parks, occupying Room 14, Borough Hall, now occupied by Commissioner of Public Works—Estimated—		
Telephone.....	\$187 50	
Tolls.....	130 00	
	.....	317 50
Excess of 1902 over 1901.....	.....	200 58
	\$5,978 36	\$5,978 36

It will be seen that the increases occur in the office of the Borough President, where the business has been largely increased, and in the creation of the office of the Assistant Commissioner and the Bureau of Incumbrances and Permits. The principal decrease was in the Bureau of Public Buildings and Offices.

Comparative statement of carfares, tickets used by the several offices and bureaus comprising the Public Works of the Borough of Brooklyn, during the past five years, from 1898 to 1902:

	1898.	1899.	1900.	1901.	1902.
General Administration, including the offices of the Borough President, Commissioner of Public Works and Assistant Commissioner	No record	.....	.....	.....	7,160
Topographical Bureau.....	No record	.....	.....	.....	11,000
Bureau of Highways.....	2,800	4,800	15,000	15,000	25,900
Bureau of Sewers.....	No record	No record	24,000	18,000	8,700
Bureau of Public Buildings and Offices.....	9,200	10,000	10,400	14,200	11,440
Bureau of Incumbrances.....	No record	.....	.....	.....	5,000

It must not be taken for granted that in the Bureau of Highways the expense of transporting the engineering corps, inspectors, clerks and messengers has increased in proportion to the use of carfare tickets, the method formerly most obtaining was for individuals to pay their carfares and send in bills for personal expenses. These bills were very numerous and aggregated a large amount.

That portion of the former Department of Public Buildings, Lighting and Supplies now constituting the Bureau of Public Buildings and offices kept two horses and wagons, at an expense of about \$1,000 a year, which service is now abolished and enough saved thereby to pay the car transportation for the General Administration and the Bureau.

The Bureau of Sewers has no record of carfares before 1900, but a considerable decrease, more than 100 per cent., is shown between 1901 and 1902.

IN ACCOUNT WITH THE DEPARTMENT OF FINANCE.

There was transmitted to the Finance Department for payment during the year 1902 four thousand one hundred and seventy-nine (4,179) vouchers from the several Bureaus, as follows:

General Administration.....	51
Topographical Bureau.....	82
Bureau of Highways.....	1,115
Bureau of Sewers.....	1,099
Bureau of Public Buildings and Offices.....	1,821
Bureau of Incumbrances and Permits.....	11
	4,179

Of these vouchers ten were returned with deductions by the Civil Service Commission:

General Administration, two (Peter Atkin).....	\$215 59
Topographical Bureau, one (H. W. Harding).....	36 29
Bureau of Highways, six—	
John F. McGrath.....	8 00
F. Scolas.....	4 00
J. Dubois Fothers.....	55 00
A. S. McIverton.....	24 00
Arthur Crocker.....	4 00
James K. Templer (increase).....	2 01
Bureau of Public Buildings and Offices, one (Andrew Brosnan) ..	7 00
	\$355 89

In the case of Peter Aitkin the matter was a technical objection and was finally settled.

In the claims for service, merchandise, repairs ten were returned for correction by the Department of Finance:

Topographical Bureau, one; deduction.....	\$4 43
Bureau of Highways, one; deduction.....	13 39
Bureau of Public Buildings and Offices, eight.....	70 81
	\$88 63

BUREAU OF BUILDINGS,
BOROUGH OF BROOKLYN, January 12, 1903.

WILLIAM M. CALDER,
Superintendent.

Hon. J. EDWARD SWANSTROM,
President of the Borough of Brooklyn:

DEAR SIR—I beg leave to submit, for your consideration, the annual report of this bureau for the year 1902. As you will observe, it is a statement embracing the number of new buildings commenced and completed, with estimated cost, alterations to buildings, with cost, violations of the law covering unsafe buildings, insufficient means of escape in case of fire, etc., violations removed and forwarded to the Corporation Counsel for prosecution, plumbing work (new and repair), over which this bureau has general supervision. While the figures themselves are sufficient evidence of what has been accomplished, I have deemed it advisable to cull out from this report some facts which may be of interest to you when comparison is made with the year 1901.

Salaries.

Salaries paid in the year 1901.....	\$149,045 54
Salaries paid in the year 1902.....	117,489 39
	\$31,556 15

A saving of \$31,556.15, or 21 per cent.

Contingent Expenses.

Amount expended in the year 1901.....	\$7,623 59
Amount expended in the year 1902.....	3,577 88
	\$4,045 71

A saving of \$4,045.71, or 53 per cent.

Money Spent and Collected in Unsafe Building Proceedings.

	Year 1901.	Year 1902.
Amount expended.....	\$9,360 46	\$1,468 04
Amount collected.....	5,945 78	1,468 04

You will observe that all of the money expended in 1902 in unsafe building proceedings has been collected, while for the year 1901 there remains \$3,414.68 yet to be collected. While we have not spent the amount of money expended in previous years, the record shows that the number of unsafe violations filed in 1901 was 661, and in 1902, 672. The number removed in 1901, 588, and in 1902, 644. This result was obtained by insisting that the owners of unsafe structures comply with the recommendations of the bureau themselves, which, after a personal interview, in most cases they were willing to do. This has been a most satisfactory arrangement, as it not only saves the City considerable money, but in a large number of cases the property of the citizens of the city has been preserved by inducing them to repair and make safe their buildings, rather than dealing summarily with them by taking the buildings down.

FRESH AIR VALVES.

Previous to January 1, 1902, the plumbing rules of the Building Department were so framed as to require the use of a certain *Fresh Air Inlet Valve*, which was sold for ten dollars. Early in January, after a consultation with the Master Plumbers' Association of Brooklyn, this rule was changed so as to require the use of a return bend when placed ten feet from the house, and where that is not possible, a mechanical device is permitted. Two additional air valves were approved with the result that the air valve above referred to, which formerly sold for ten dollars, can now be purchased for three dollars and seventy-five cents, a difference of six dollars and twenty-five cents on each. When it is understood that 3,200 buildings were erected in Brooklyn during the year 1902, it does not take much computation to show that the builders in this borough were saved in this small item alone over \$20,000.

RELATION OF BUREAU TO PUBLIC.

Section two of the Building Code specifies that it is a remedial measure, and is to be construed liberally. It has been the policy of this bureau during the past year to exact a just and uniform compliance with the law and at the same time be in line with the express purpose of the Code (while insisting at all times that the public interests be guarded, particularly where the lives and health of the people and the safety and strength of the structures are concerned). I have endeavored to construe the law liberally rather than annoy and hamper the great building industry by petty and unreasonable restrictions. The business of the architects, builders and plumbers having dealings with this office has been expedited, and when it is considered that the number of plans examined and approved very nearly equals the number approved in all the boroughs of the Greater City combined, it is gratifying to know that the dispatch with which the great volume of work is handled here is a matter of commendation by the architects and builders generally. In this direction I desire to commend the Chief Examiner and the Chief Engineer of the bureau, Messrs. Thornbury and Faribault, to whom, in a large measure, the good record and reputation of this office are due. I might add the gratifying statement that not a single charge of extortion has been made against any employee of the bureau during the past year.

SUPERVISION.

This office has supervision over the construction of new buildings and the alteration of old ones. It contains a separate bureau which has charge of all the plumbing in this borough, which, in itself, is a large undertaking, dealing as it does with a proper sanitary arrangement of the plumbing in buildings of every description. It is also responsible for the safe condition of now existing buildings, of which there are 150,000 in Brooklyn. We are particularly charged with the inspection of passenger and freight elevators, places of public amusement, hotels, warehouses, factories, churches, schools, etc. While

we are having difficulty in enforcing some of the provisions of the Code, I am pleased to inform you that in nearly every instance, when properly understood, the public has readily complied with the recommendations of the bureau. The thoroughness of this work is best exemplified in the fact that not a single life has been lost in this borough during the year 1902 through the negligence or oversight of the employees of this bureau. In this connection I might add that during the past summer a thorough and careful inspection was maintained over all of the contrivances carrying passengers at Coney Island, with the results that while upwards of 10,000,000 persons were carried, but one accident occurred, and that before the device had been approved by this bureau.

EXISTING CONDITIONS AND OUTLOOK.

I submit a comparative table of the building operations in this borough for the last five years also one showing the operations in the various boroughs for the past year, in which is shown the number of square miles of territory in each:

Operations, Years 1898, 1899, 1900, 1901 and 1902.

Year 1898.....	\$17,330,531 00
Year 1899.....	25,469,458 00
Year 1900.....	18,553,596 00
Year 1901.....	20,574,708 00
Year 1902.....	21,730,073 00

New Buildings and Buildings Altered in the City of New York—Year 1902.

	NEW BUILDINGS.	ESTIMATED COST.	ALTERA- TIONS.	ESTIMATED COST.
Manhattan.....	859	\$80,384,375 00	2,017	\$9,498,403 00
Bronx.....	882	6,503,979 00	661	637,395 00
Queens.....	1,244	4,721,240 00	550	415,929 00
Richmond.....	348	1,025,519 00	693	306,825 00
Brooklyn.....	3,173	18,549,062 00	2,082	3,181,011 00

The area of The City of New York is $327\frac{1}{4}$ square miles.
By boroughs as follows:

Manhattan	22	square miles
Bronx	$40\frac{1}{2}$	"
Queens	130	"
Richmond	$57\frac{1}{4}$	"
Brooklyn	$77\frac{1}{2}$	"

It will be seen that with the exception of the year 1899 the operations of the year 1902 exceed any year in the history of Brooklyn.

The comparison with the different boroughs speaks for itself. The figures show that the number of new buildings in Brooklyn for 1902 nearly equals the number in all of the other boroughs combined. While the total cost of new structures in Manhattan exceeds that of Brooklyn, if the hotels and office buildings are eliminated, it will be found that Brooklyn has during the past year provided more homes for the people than Manhattan and The Bronx combined.

I believe if the Tenement House Law is modified and better transit facilities are established with Manhattan, that the development of the building industry in this borough in the near future will far exceed the most sanguine expectations.

Yours respectfully,

WILLIAM M. CALDER,
Superintendent of Buildings, Borough of Brooklyn.

STATEMENT OF THE BUREAU OF BUILDINGS.

*Plans and Specifications for New Buildings Filed and Acted Upon during
the Year ending December 31, 1902.*

CLASSIFICATION.	NUMBER OF APPLICATIONS.	NUMBER OF BUILDINGS.	ESTIMATED COST.
1. Dwelling houses, estimated cost over \$50,000.....	1	1	\$70,000 00
2. Dwelling houses, estimated cost between \$20,000 and \$50,000.....	2	2	50,000 00
3. Dwelling houses, estimated cost less than \$20,000.....	279	865	4,091,025 00
4. Brick tenement houses, estimated cost over \$15,000.....	18	28	838,000 00
5. Brick tenement houses, estimated cost less than \$15,000.....	63	129	1,088,775 00
6. Stores, estimated cost over \$30,000.....	4	4	305,000 00
7. Stores, estimated cost between \$15,000 and \$30,000.....	2	2	44,000 00
8. Stores, estimated cost less than \$15,000.....	67	108	350,417 00
9. Office buildings.....	7	7	367,850 00
10. Manufactories and workshops.....	120	131	1,969,460 00
11. School houses.....	14	14	1,786,254 00
12. Churches.....	7	9	201,800 00
13. Public buildings, municipal.....	17	17	565,700 00
14. Public buildings, places of amusement, etc.....	25	25	1,491,750 00
15. Stables.....	63	65	163,725 00
16. Frame dwellings.....	830	1,207	4,363,531 00
17. Frame structures.....	450	484	569,275 00
18. Frame tenements.....	40	75	232,500 00
Totals.....	2,009	3,173	\$18,549,062 00

Plans and Specifications for Alterations to Buildings Filed and Acted Upon during the Year ending December 31, 1902.

CLASSIFICATION.	NUMBER OF APPLICATIONS.	NUMBER OF BUILDINGS.	ESTIMATED COST.
1. Dwellings	262	275	\$261,361 00
2. Flats .....	....	....	.....
3. Tenements	131	143	66,210 00
4. Hotels and boarding houses	16	18	31,315 00
5. Stores.....	77	85	429,415 00
6. Offices	12	13	50,150 00
7. Manufactories and workshops.....	152	159	757,550 00
8. Schools	21	21	225,421 00
9. Churches.....	15	16	97,930 00
10. Public buildings	33	33	577,296 00
11. Stables.....	27	28	34,810 00
12. Frame buildings	1,230	1,291	649,553 00
Totals	1,976	2,082	\$3,181,011 00

Violations of Law and Unsafe Buildings during the Year ending December 31, 1902.

NATURE.	Pending.	Received Since.	Total.	Remedied before action of Court.	Total for Disposition.	Pending.	Forwarded to Council.
1. Defective light and ventilation	1	2	3	1	1	2	....
2. Defective plumbing and drainage.....	395	559	954	661	661	293	327
4. Defective construction and materials.....	944	1,315	2,259	1,234	1,234	1,025	783
5. Erecting and altering without permit.....	218	621	839	535	535	304	270
6. In-sufficient means of escape, fire escapes out of repair, etc..	1,960	606	2,566	2,440	2,440	126	1,164
7. Unsafe buildings.....	289	672	961	736	736	225	340
Totals.....	3,807	3,775	7,582	5,607	5,607	1,975	2,884

Notices Issued during the Year ending December 31, 1902.

To place fire escapes on buildings.....	606
To remove violations of law.....	2,497
To remove unsafe buildings.....	672
Of disapproval of plans.....	67
Notes delivered.....	.....
To repair passenger elevators.....	46
Totals	3,888

Complaints Received and Investigated during the Year ending December 31, 1902.

NATURE.	Received Since.	Total.	Unfounded.	Remedied on Verbal Notice.	Notice Issued.	Total.	Pending.
1. Defective flues.....	40	40	9	6	25	40	..
2. Defective construction, materials, etc.....	42	30	17	2	10	29	1
3. Defective leaders.....	31	31	9	3	19	31	..
4. Erecting and altering without permit.....	60	60	38	1	21	60	..
5. Insufficient means of escape, etc.....	44	44	12	1	31	44	..
6. Wood too near flue.....	..	..	..	..	..	..	..
7. Unsafe buildings.....	240	240	107	15	118	240	..
8. Defective plumbing and drainage.....	72	72	31	7	33	71	1
9. Erecting frame structures without permit.....	94	94	50	..	44	94	..
10. Fences over 10 feet high.....	16	16	5	2	9	16	..
Totals.....	627	627	278	37	310	625	2

Inspection of Passenger Elevators during the Year ending December 31, 1902.

Number inspected.....	6,134
Found to be in good order and fit for use.....	6,088
Found not in compliance with the law.....	46

Disposition of Cases Found not in Compliance with the Law.

NATURE.	PENDING.	RECEIVED SINCE.	TOTAL.	LAW COMPLIED WITH.	PENDING.	COUNSEL.
1. Defective safety appliances.....	1	..	1	..	1	..
2. No grating under overhead machinery. }	15	46	61	39	22	32
Totals.....	16	46	62	39	23	32

Iron and Steel Inspections Made during the Year ending December 31, 1902.

Beams	6,731
Columns	1,690
Lintels	168
Channels	1,026
Girders	267
Angles	459
Shoe plates.....	14
Trusses	21
Ties, caps, separators.....	
Bases	103
T-bars	
Totals	12,479

Total number of iron and steel inspections during the year.....	12,479
Total number of construction inspections during the year.....	351,481
Applications for ordinary repairs made on construction slip blanks	2,916
Estimated cost of repairs on construction slip blanks.....	338,638

Location of New Buildings Commenced and Completed during the Year ending December 31, 1902.

WARDS.	COMMENCED.	COMPLETED.
First	10	....
Second.....	6	4
Third	9	9
Fourth	2	6
Fifth.....	5	9

WARDS.	COMMENCED.	COMPLETED.
Sixth.....	10	2
Seventh.....	26	77
Eighth.....	221	87
Ninth.....	50	60
Tenth.....	18	8
Eleventh.....	6	11
Twelfth.....	16	16
Thirteenth.....	4	3
Fourteenth.....	30	11
Fifteenth.....	20	28
Sixteenth.....	9	10
Seventeenth.....	58	83
Eighteenth.....	53	34
Nineteenth.....	6	3
Twentieth.....	12	8
Twenty-first.....	24	24
Twenty-second.....	127	46
Twenty-third.....	72	39
Twenty-fourth.....	173	146
Twenty-fifth.....	31	81
Twenty-sixth.....	299	248
Twenty-seventh.....	19	30
Twenty-eighth.....	162	195
Twenty-ninth.....	371	476
Thirtieth.....	269	263
Thirty-first.....	304	168
Thirty-second.....	144	126
Totals.....	2,665	2,311

*Location of Alterations to Buildings Commenced and Completed during
the Year ending December 31, 1902.*

WARDS.	COMMENCED.	COMPLETED.
First	46	38
Second	9	11
Third	43	43
Fourth	31	38
Fifth	29	25
Sixth	32	50
Seventh	67	51
Eighth	79	60
Ninth	32	36
Tenth	49	43
Eleventh	36	42
Twelfth	42	56
Thirteenth	10	25
Fourteenth	78	54
Fifteenth	54	48
Sixteenth	49	48
Seventeenth	73	69
Eighteenth	71	52
Nineteenth	14	20
Twentieth	28	53
Twenty-first	77	58
Twenty-second	67	70
Twenty-third	73	42
Twenty-fourth	53	49
Twenty-fifth	37	32
Twenty-sixth	182	182

WARDS.	COMMENCED.	COMPLETED.
Twenty-seventh	47	41
Twenty-eighth	85	71
Twenty-ninth	116	112
Thirtieth	122	87
Thirty-first	211	154
Thirty-second	30	26
Totals.....	1,968	1,786

New buildings in progress.....	5,426
Alterations in progress.....	1,660
New buildings commenced.....	2,665
New buildings completed.....	2,311
Alterations commenced.....	1,968
Alterations completed.....	1,786

Number of Buildings Inspected and Total Number of Inspections Made during the Year ending December 31, 1902, in Relation to Plumbing and Drainage.

NATURE.	TENEMENTS. AS TO PLUMBING AND DRAINAGE.	MISCELLANEOUS. AS TO PLUMBING AND DRAINAGE.	TOTAL.
Number of buildings under inspection..	458	1,104	1,562
Number of buildings commenced.....	140	1,938	2,078
Number of buildings completed.....	264	1,469	1,733
Number of buildings under inspection..	334	1,573	1,907

Total number of inspections during the year, 65,890.

Comparative Statement for the Years 1901-2.

	YEARS.		INCREASE.
	1901.	1902.	
Number of new buildings and alterations for which permits were issued.....	7,366	8,171	805
Number of new buildings completed.....	2,507	2,311	...
Number of alterations completed.....	1,832	1,786	...
Violations reported by the inspectors.....	3,373	2,543	...
Notices issued.....	9,409	3,888	...
Complaints lodged with the Department.....	890	609	...
Unsafe buildings made safe or taken down.....	588	644	56
Violations forwarded for prosecution.....	1,604	1,410	...
Unsafe building cases forwarded for prosecution.....	21	340	319
Fire escape cases forwarded for prosecution.....	2,043	1,164	...
Number of fire escape violations.....	3,255	606	...
Number of passenger elevators examined.....	7,018	6,134	...
Violations removed.....	3,099	2,168	...
Estimated cost of new buildings and alterations.....	\$20,574,798	\$21,730,073	\$1,155,275

BUREAU OF BUILDINGS, BOROUGH OF BROOKLYN.

Number of employees on September, 1902, pay-roll.....	82
Number of employees on December, 1902, pay-roll.....	83
Increase	1

List of Appointments and Dismissals.

Appointments—

2 Inspectors of Carpentry and Masonry, each..... \$1,200 00

Dismissals—

1 Inspector of Carpentry and Masonry..... \$1,200 00

Statement of Finances for the Year ending December 31, 1902.

Amount of salary appropriation.....	\$122,400 00
Pay-rolls for the year.....	117,489 39
Balance	\$4,910 61

Contingencies and emergencies appropriation.....	\$6,057 00
Vouchers certified to the Comptroller for the year.....	3,577 88
Balance	\$2,479 12

Unsafe Building Fund.

Deposited with the Comptroller, year ending December 31, 1902.	\$1,250 32
4 vouchers drawn against this account.....	385 75
Balance in hand December 31.....	\$864 57

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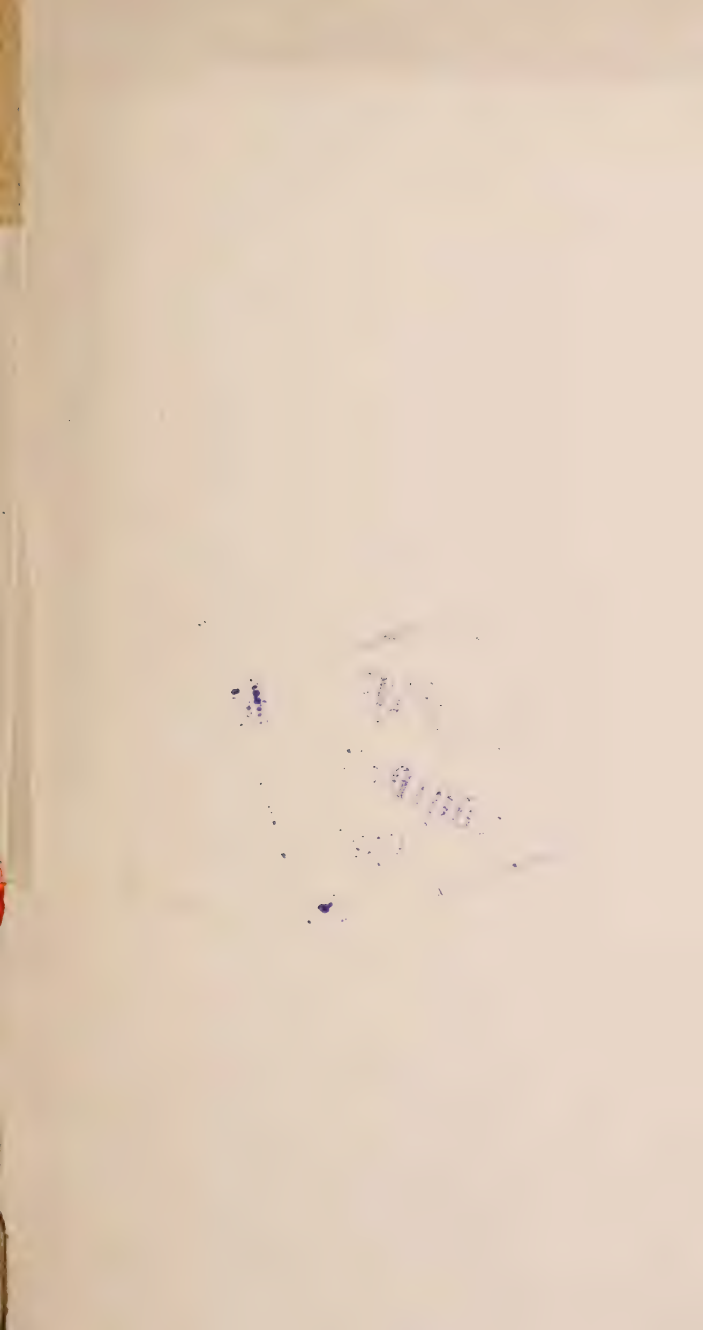
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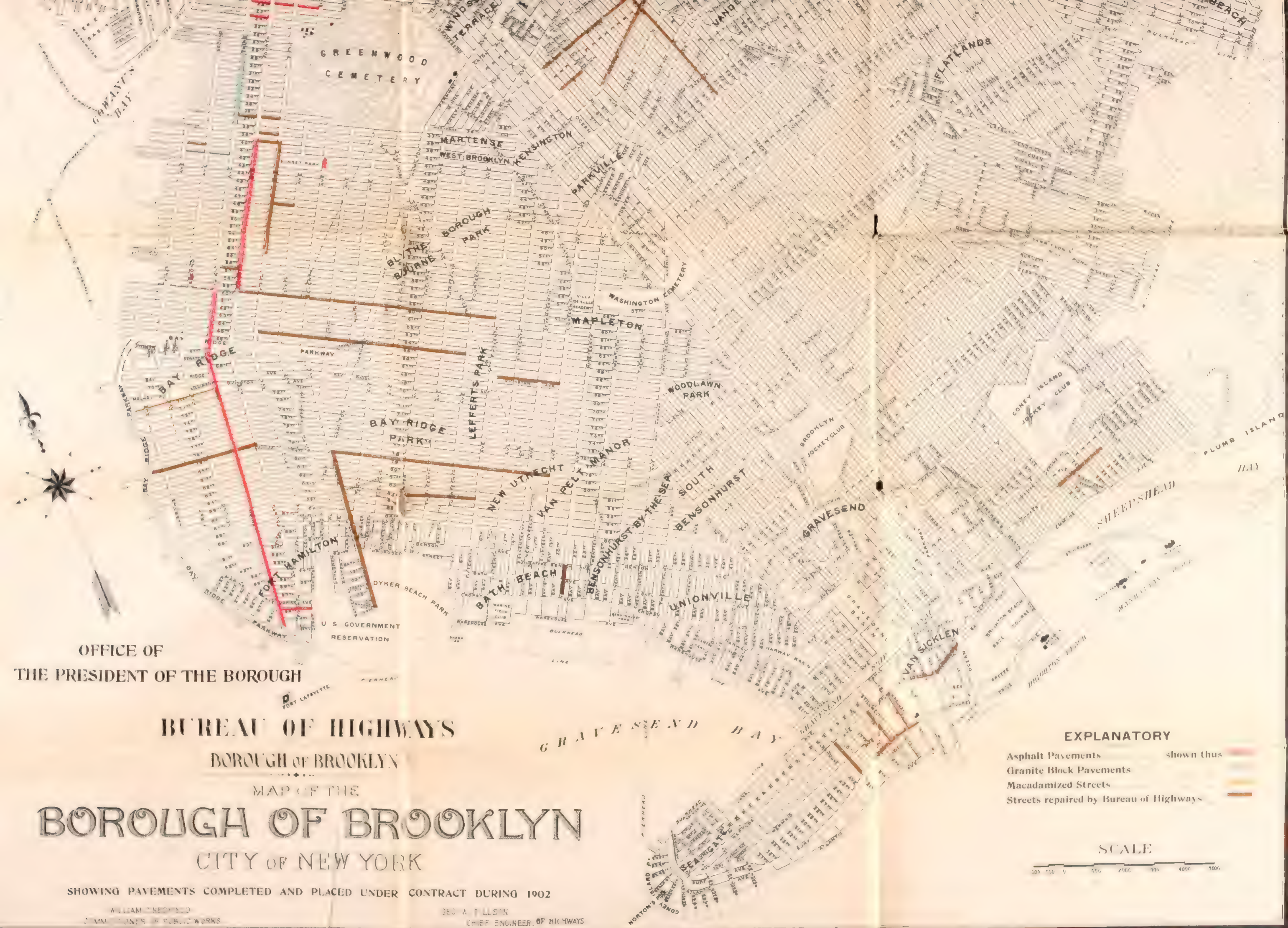
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OFFICE OF
THE PRESIDENT OF THE BOROUGH

BUREAU OF HIGHWAYS
BOROUGH OF BROOKLYN

MAP OF THE
BOROUGH OF BROOKLYN
CITY OF NEW YORK

SHOWING PAVEMENTS COMPLETED AND PLACED UNDER CONTRACT DURING 1902

WILLIAM NEEDHAM
CHIEF ENGINEER OF PUBLIC WORKS

SEC. A. TILLSON
CHIEF ENGINEER OF HIGHWAYS

EXPLANATORY
Asphalt Pavements shown thus
Granite Block Pavements
Macadamized Streets
Streets repaired by Bureau of Highways

SCALE
0 100 200 300 400 500

DO NOT WRITE IN THESE SPACES

DATE: _____

NAME: _____

ADDRESS: _____

CITY: _____

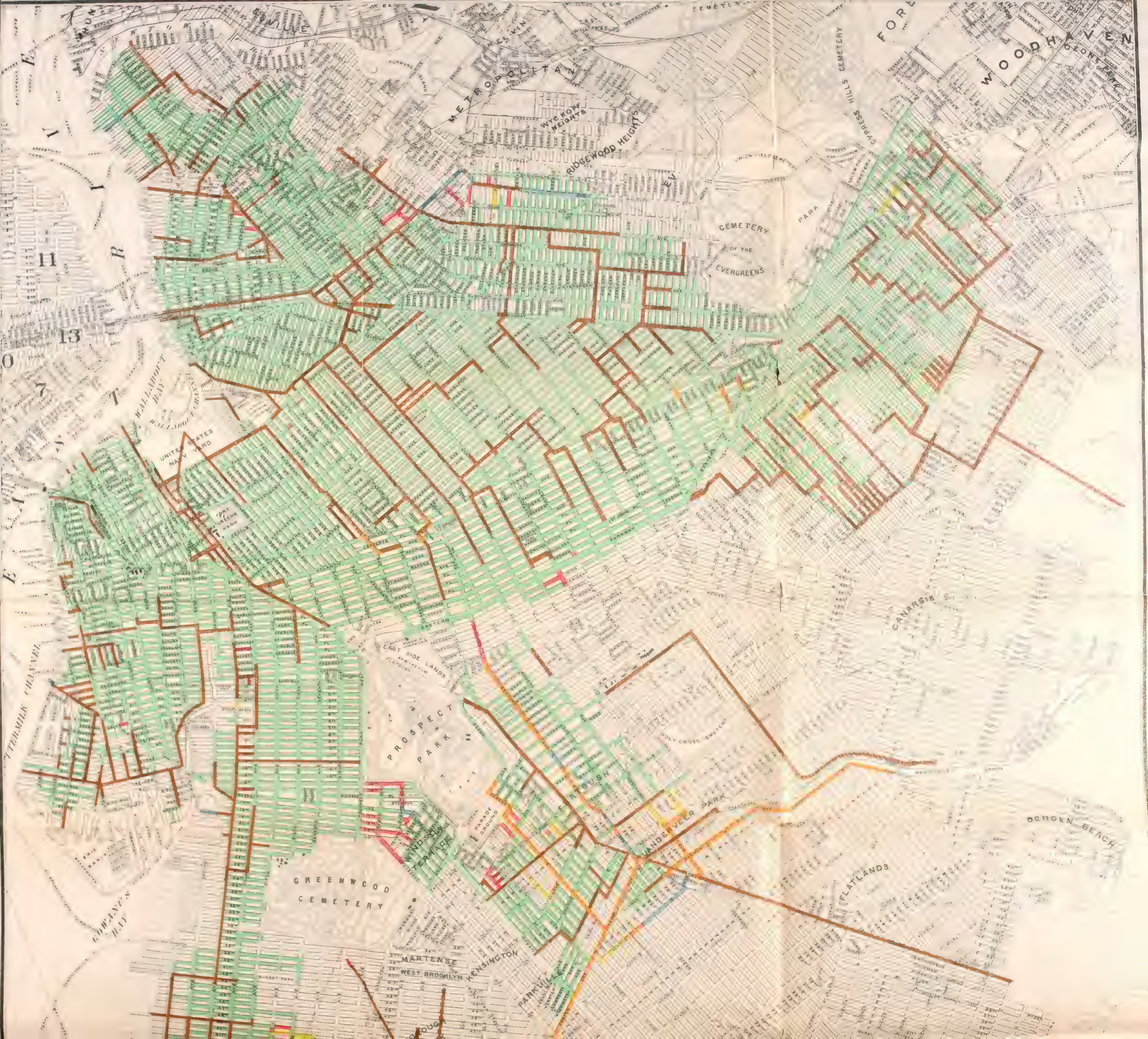
STATE: _____

COUNTRY: _____

TELEPHONE: _____

FAX: _____

EMAIL: _____



OFFICE OF THE PRESIDENT OF THE BOROUGH
BUREAU OF SEWERS
MAP OF THE
BOROUGH OF BROOKLYN
CITY OF NEW YORK

SHOWING ALL SEWERS COMPLETED UP TO JANUARY FIRST, 1902.
ALSO THOSE COMPLETED DURING THE YEAR 1902.
ALSO THOSE NOT COMPLETED, BUT AUTHORIZED AND IN COURSE OF
CONSTRUCTION DURING THE YEAR 1902.

EXPLANATORY.

- Brick Sewers Constructed up to January 1st, 1902
- Pipe Sewers Constructed up to January 1st, 1902
- Brick Sewers Constructed during the Year 1902
- Pipe Sewers Constructed during the Year 1902
- Brick Sewers not completed, but authorized and in course of construction during the year 1902
- Pipe Sewers not completed, but authorized and in course of construction during the year 1902

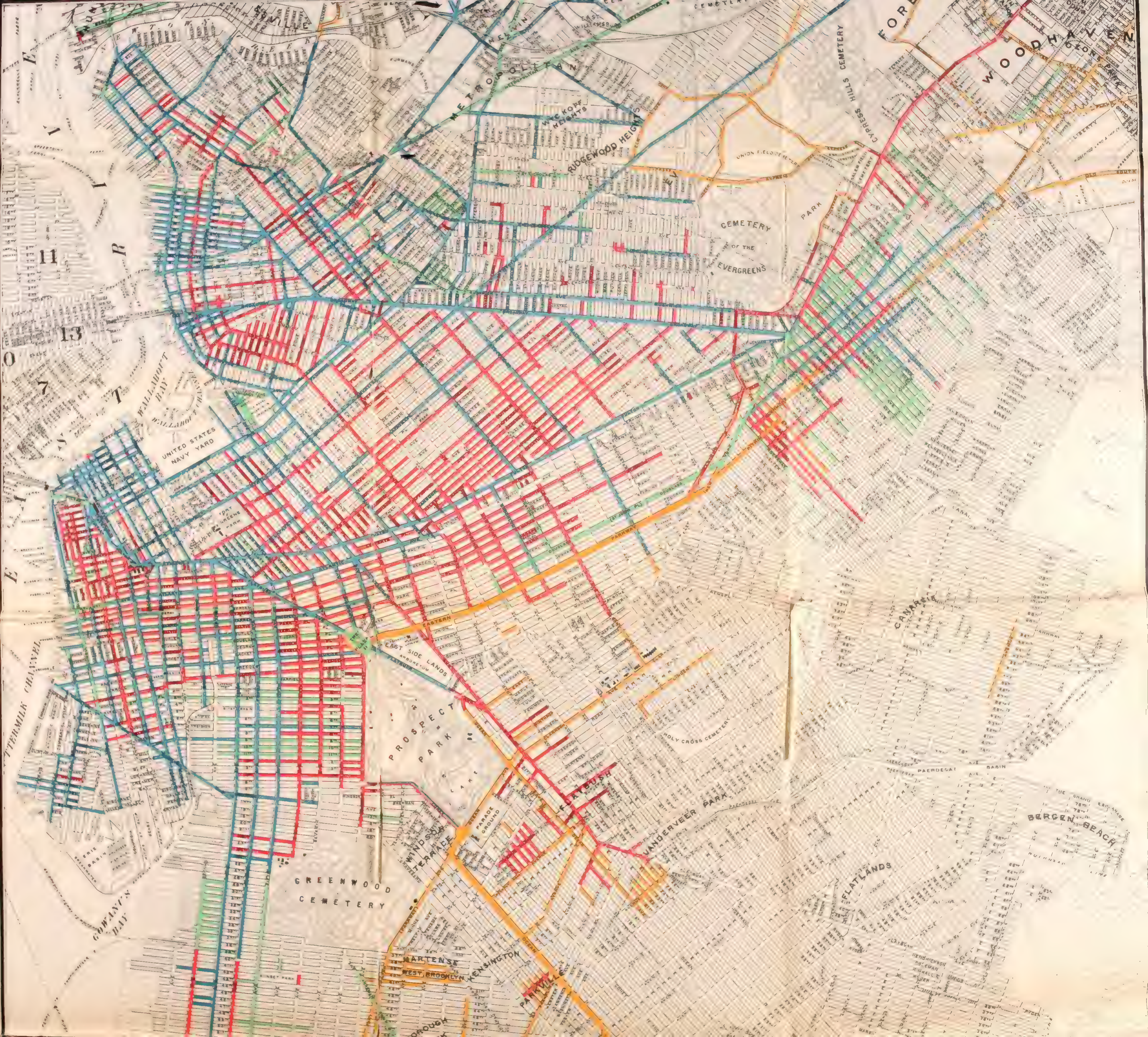
WM. C. REDFIELD,
COM. PUBLIC WORKS

JOHN THATCHER,
SUPT. OF SEWERS

HENRY R. ASSERSON,
CHIEF ENGINEER

SCALE

0 100 200 300 400 500



OFFICE OF
THE PRESIDENT OF THE BOROUGH

BUREAU OF HIGHWAYS
BOROUGH OF BROOKLYN

MAP OF THE
BOROUGH OF BROOKLYN
CITY OF NEW YORK

SHOWING STREET PAVEMENTS OTHER THAN COBBLESTONE IN JANUARY FIRST 1903

WILLIAM C. BROWN
MANAGER OF PUBLIC WORKS

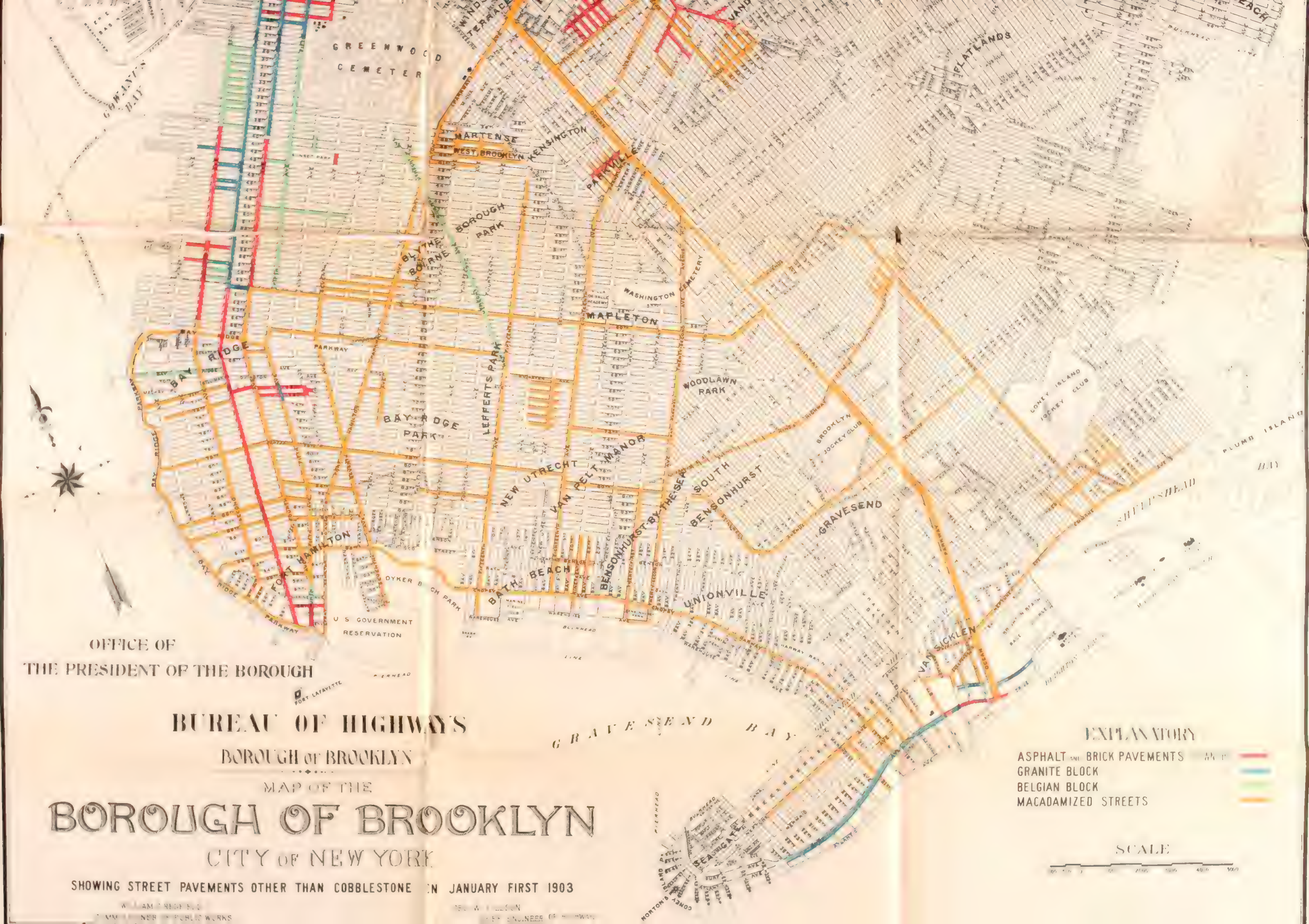
WILLIAM C. BROWN
ENGINEER OF HIGHWAYS

EXPLANATORY

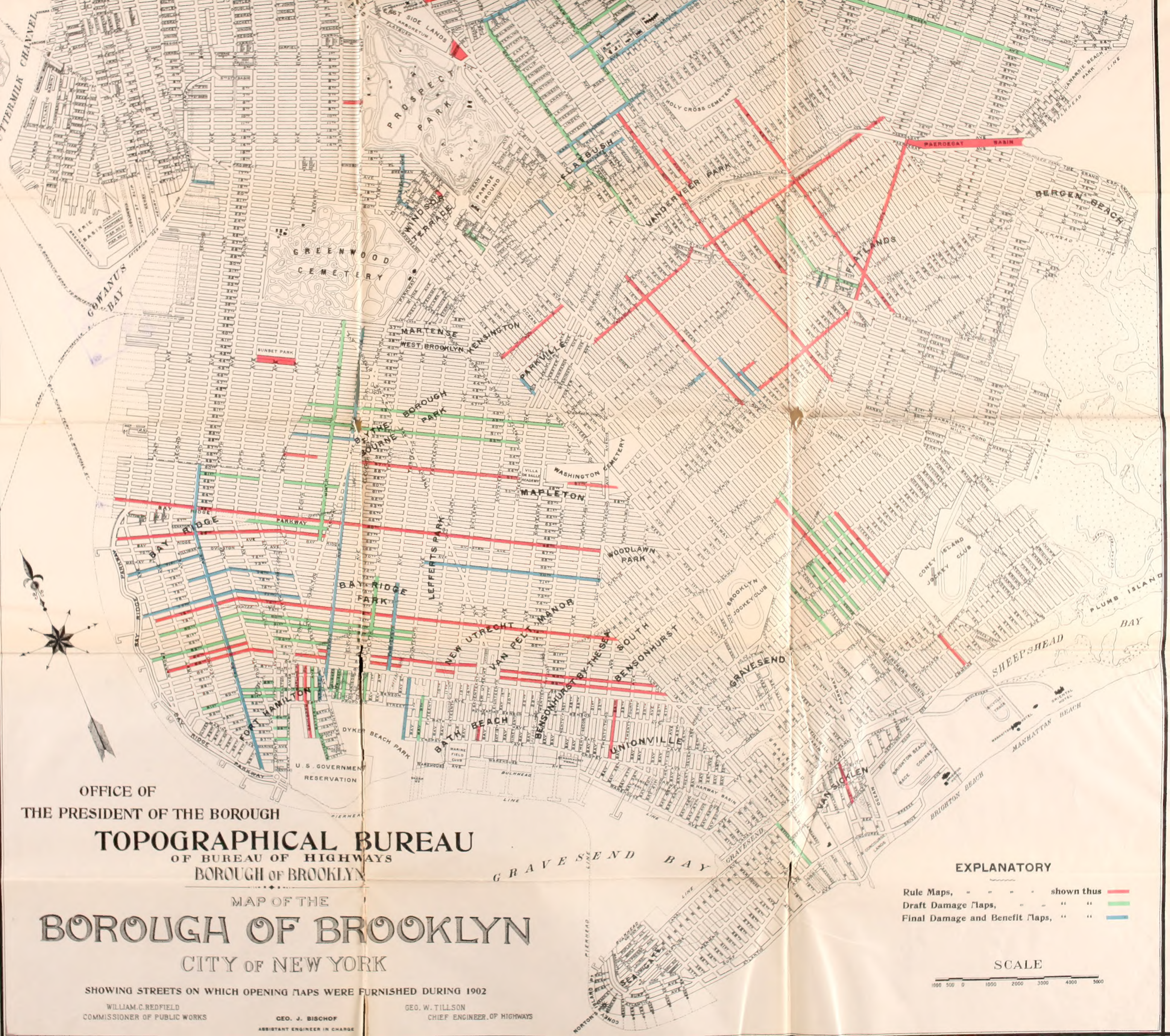
ASPHALT AND BRICK PAVEMENTS
GRANITE BLOCK
BELGIAN BLOCK
MACADAMIZED STREETS

SCALE

0 10 20 30 40 50 60 70 80 90 100







OFFICE OF
THE PRESIDENT OF THE BOROUGH
TOPOGRAPHICAL BUREAU
OF BUREAU OF HIGHWAYS
BOROUGH OF BROOKLYN

MAP OF THE
BOROUGH OF BROOKLYN
CITY OF NEW YORK

SHOWING STREETS ON WHICH OPENING MAPS WERE FURNISHED DURING 1902

WILLIAM C. REDFIELD
COMMISSIONER OF PUBLIC WORKS

GEO. J. BISCHOF
ASSISTANT ENGINEER IN CHARGE

GEO. W. TILLSON
CHIEF ENGINEER OF HIGHWAYS

EXPLANATORY

Rule Maps, - - - - - shown thus —
Draft Damage Maps, - - - - - " " —
Final Damage and Benefit Maps, " " —

SCALE

1000 500 0 1000 2000 3000 4000 5000

